Final Report

West Kitikmeot Slave Study

Includes 2000-2001 Annual Report

Primary Contributors (over $1,000,000)

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Canada

DIAVIK DIAMOND MINES INC

Northwest Territories

Major Contributors (over $100,000)

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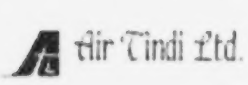

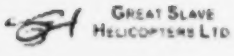

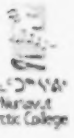

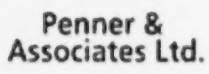

West Kitikmeot Slave Study Society

West Kitikmeot Slave Study Society
Final Report
Includes Annual Report 2000-2001

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WEST KITIKMEOT / SLAVE STUDY SOCIETY

March 31, 2001

West Kitikmeot / Slave Study Partners

Dear Partners,

On behalf of the West Kitikmeot / Slave Study Society I am pleased to present to each of you the final report of the Study. All of the research is summarized here and the report provides a brief overview of the entire Study, its activities and accomplishments and specific information for the fiscal year from April 1, 2000 to March 31, 2001.

The Society's achievement of its several valuable and lofty objectives has relied on the many and varied contributions by you, the Partners, and our numerous supporters who have helped over the years: researchers, reviewers, community leaders, contributors - and the list goes on. Thank you all for your commitment to maintaining our high standards, making our research relevant and building our Partnership. Each of you plays an important role in the Partnership's accomplishments, and you deserve congratulations for the Study's success.

Yours truly

Ted Blondin
Chair

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Executive Summary

The West Kitikmeot / Slave area is vast – roughly 300,000 square kilometres between Yellowknife and the Arctic Coast – and largely undeveloped but with enormous potential. The discovery of diamonds at Lac de Gras in 1992 led to the biggest staking rush in world history. Virtually the entire area has been subject to mineral claims in the last decade. There are several operating mines, mining proposals under regulatory review, a port proposal, two hydroelectric developments and a number of potential mineral and infrastructure projects.

The Slave Geological Province is a geological zone containing major diamond, gold and other mineral deposits.

At the same time, Aboriginal peoples have deep historical and cultural ties to the area. It has been a homeland for Dene and Inuit for thousands of years. It sustains wildlife including Bathurst caribou, Grizzly Bear, Muskoxen, wolves, Moose and furbearers, huge populations of migratory birds and significant fish populations.

The West Kitikmeot Slave Study Society was set up to collect environmental and socioeconomic information, to enable better-informed planning and contribute to a baseline for assessing and mitigating cumulative effects of development. Nine founding Partner organizations – representing a range of interests including governments, Inuit and Dene communities, environmental organizations and the mining industry – contributed financially and held seats on the Board. WKSS Board members were assisted by a Traditional Knowledge Steering Committee and a Project Steering Committee according to a research strategy developed by the Board as a whole. The Study office had three staff responsible for administering projects and communicating results to Partner organizations, local communities and other interested individuals and organizations.

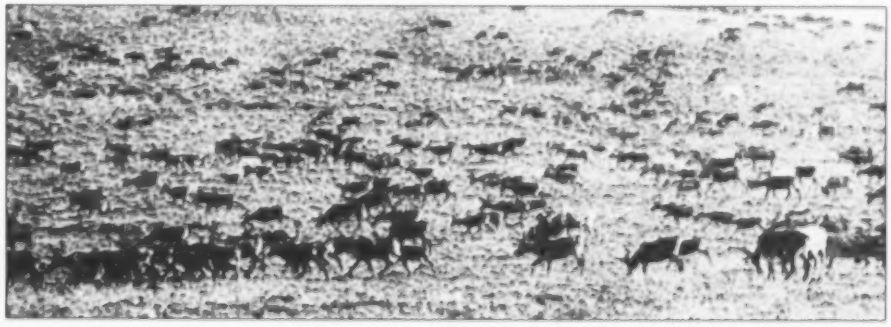
Over the course of the Study, the Partners raised close to ten million dollars. In the original funding formula there was a three-way split with approximately one-third of the money from the Government of Canada, one-third from the Government of the Northwest Territories, and the remaining third from Aboriginal, Industrial/Mining and Environmental organizations and companies. BHP Diamonds and Diavik Diamond Mines, the major financial interests in the Study Area, each contributed more than one million dollars. With the creation of Nunavut, the Government of Nunavut joined the Study and the funding partnership, with the end result being that the Government of Canada contributed just over a third of the required funds, an impressive array of 46 different Industry/Aboriginal/Environmental Organizations contributed just under a third (with Industry providing about 85% of this), Government of the Northwest Territories contributed about 28% and Government of Nunavut contributed about 2%.

Some 80 percent of the money was applied directly to research. Collection of baseline information was seen as a first step in developing a monitoring program for regional cumulative effects of development. Both scientific and traditional knowledge studies were supported and, where possible, results were integrated.

Over the period of the study, 74 proposals for projects or revisions to projects were received and reviewed. The Management Board met 18 times over the course of the study and approved 21 projects and 17 revisions/extensions of four types of research:

wildlife and habitat studies:

Most effort was directed at caribou as this was identified by the WKSS Partner organizations as a major concern. Some of the projects were standard scientific wildlife and habitat studies involving radio/satellite collars, collecting plants and droppings and other well-established techniques to assess caribou behaviour, movements and habitat, as well as Grizzly Bear, Wolverine and wolf ecology. Other projects documented the extensive knowledge of elders – both Dene and Inuit – on caribou and caribou habitat as well as other environmental components such as vegetation, climate, birds, fish and furbearers. The elders' detailed and site-specific descriptions of the area provided an historical context impossible to achieve with scientific studies alone. Dogrib elders also recorded and explained place names to provide a form of land classification. Preliminary indicators of ecological health from a traditional knowledge perspective were also developed.



NWT Archives, 1950s

physical environment:

One study reviewed the area's historical water quality; pollen and sediment analysis in a lake bottom showed a general warming trend and longer ice-free conditions today than in the past, with no significant change in water quality. Another study – working closely with winter drilling crews – found that impacts of such drilling through frozen lakes are minimal, temporary and localized, except for drilling into kimberlite (diamond) ores which produce a more toxic effluent.

socioeconomic:

These pilot studies were based in Lutselk'e. One involved developing indicators and implementing a community based monitoring system so that the community could self-assess impacts of development in the area. Another study documented traditional knowledge of community health as a form of baseline information for comparison with current trends.

preliminary:

Remaining studies were preliminary and did not collect data. They included proposals to collect traditional knowledge related to several scientific studies, a planning project regarding collection of traditional knowledge in Lutselk'e, development on a remote air quality monitoring system and a description of habitat characteristics of the calving area of the Bathurst Caribou herd.

Based on these reports, and all other written materials available, WKSS has produced a *State of Knowledge Report*. Impressive in its sweeping range, *State of Knowledge* reviews effects of climate change – already observed as changes in permafrost, vegetation, fires, animals, birds and fish – and long-range transport of pollutants, among others. The most significant environmental stresses in the area are largely localized, such as pollution associated with mining and other developments. The socioeconomic discussion reviews the impacts of increasing wage employment: there is no evidence yet that it exacerbates social problems but concerns remain about possible impacts on natural environments and on hunting and fishing activities. The report incorporates traditional knowledge, most of which was never before collected and communicated in written form.

Joseph Whane

Researchers and elders gather on the land to document Dogrib knowledge about habitat and the place names associated with that habitat.

WKSS and the *State of Knowledge Report* identify socioeconomic and environmental priorities for future research including:

- the traditional economy in relation to caribou harvesting;
- assessment of benefits/dis-benefits of development to communities;
- water quality and surface drainage (freshwater and marine environments);
- information on identified species as well as critical and significant habitats;
- effects of fire and subsequent recovery of vegetation; and
- further collection of traditional knowledge and identification of sacred and cultural sites.

All WKSS objectives were met to a large degree over the course of the five years, though none completely. The Study produced an information base to support resource management decisions and assessment of ecological, socioeconomic and cumulative effects. Research reports to WKSS have been used as supporting documents in several submissions regarding cumulative effects of proposed developments. WKSS sponsored both traditional knowledge and scientific studies and sought ways to bring both to bear on critical research problems. It encouraged a community-based training component in WKSS-sponsored studies. It provided a forum for collecting, sharing and communicating information. It has inspired interest from around the world, and set a standard for cooperation which will be difficult to surpass.

Communication was an essential part of the Study process. Regular newsletters and annual reports were sent directly to more than 400 recipients and distributed through northern newspapers. Libraries, schools and other interested organizations received copies of the newsletters and annual reports which contain summaries of Study activities and research results. The Study and its projects received extensive media coverage on television and radio, and in newspaper and magazines. Area communities hosted public presentations and displays by WKSS. Presentations and research updates were made to several northern organizations and at public forums. There was international interest as well at various forums. Study materials continue to be available at www.wkss.nt.ca.

Much remains to be done. With WKSS officially complete, the Partners would like to see a broad range of interests involved in putting together a successor organization to meet the research needs of communities, industry, and the new management structures which have been established in the WKSS area. The Study recommends that the capacity to effectively use research results be improved, that high priority gaps in information be identified and addressed, and that some key preliminary projects identified by WKSS be continued in the transition period until a new structure is operational.

K'aldé betsłį hanı

Dırí West kıtıkmeot sı dezį nené k'é sı nı nechá ?at'é kǫnoná lımıl dechęn ku. Bewuldesché ts'į yutthę ts'ën hahá sı nı nechá hel tth'í tthé neǫ hǫlǫ snı. 1992 ku sı dırí tthé luzé hul?ą sı ts'į dené łą nı hįłchu yutthę ts'ën k'ąnıhułdǫ ją dezį hanodher snı. Ją łǫna xaıyé ku ts'į yutthę ts'ën nı naltsi ?ają. Dǫ sı nake tsambá k'é halá hell tth'í des t'á satsan hetł'él há nǫnt'á ha snı.. Tth'I naı tsambá k'é nıt'á tthé ?ası k'ǫnetá ?at'é.

Dené Sǫłıné sı tth'I be nené k'é ?at'é tth'I dené zas k'é tth'I łą hel tth'I ?ekená dené sı tth'I benené ?at'é yunızį thaí dęné ts'į Dené nadé hél tth'í kech'ąndı sı tth'I łą ?at'é. Dırı ?etthęn, sas chogh,Yutthę ts'į ?ejeré,nunıé,denıé tth'I kech'ąndı łą ?ełk'éch'á nadé-u tth'į cheth chu ?ǰyes łą ?ełk'éch'á nadé ?eyer ku naré sı tth'I łué ku ye łą nadé hel snı.

Dırı West Kıtıkmeot Slave Study Socıety dené dełtth'I ?alyá dırı ?asıé chu dené t'at'u ?ała nezǫ ghaladá hası ts'į hanı nałts'í ha ?ała dełtth'I nı. Ku t'a hal?į nılé sı dırı nı k'é ghalada tth'é net'į nı sı ts'į dhı ch'á ha badí. Łǫka dené ?ałá hunıłther t'ą behel sı Nıts'ęn k'aldher-u, ?ekená dené, dené sǫłıné hayorįla ts'į chu tth'I nı chu ?ası hałnı dené-u,tth'I tthé hel ghalana dené ?ałá dełtth'ı ?eyer ts'į dırı dené chłąnıé hel ghalada dené hel ghalana WKSS hulyé nı. Kąnı dené la hube ts'į t'a sı dırı hayorįlą k'eya chu tth'I t'a a?sıé k'onetá hası la hałnı-u tth'I dırı t'ą dené behel sı hel halnı-u tth'I hayorįla k'eya dené hel hanı-u tth'I t'ą ?eyılé dené behel sı tth'I hel halnı halyá nı.

Ku la hunıdher ts'į sı dırı Dené ?ała dełtth'I sı łǫna lımıyǫ ts'ąmba łá nıla bet'a ghalada ha. Ku t'at'u ?alyá sı ka ts'ęn tsąmba nılya nı ku Dırı nuwé k'eya ts'į nı ts'ęn k'aldher, tth'I Ją ?edza nené ts'į nı ts'ęn K'aldher tth'I ?eyer ts'į Dene Sǫłıné dené-u tth'I t'ą ts'ąmba nıla sı, ?asıé Hałé kụę, ts'ąmba k'é nǫlé dené, ?asıé ts'ędhı ch'a

hałnı dené tth'I ?eyılé hunıłthı dené dąlı sı dené hanełt'é dené ?ała ghalana ?at'é. BHP, chu Dıavık chu tth'I t'ą ?asi k'onetá dené dąlı sı –u tth dırı nuwé ts'ı nı ts'ęn k'aldher sı ła lımıyǫ tsąmba nılá. ku dırı dınǫna ts'ęn k'eka nǫlká sı ?eyılé dené chu tth'I Dené Sǫlıné ts'ı ?ąne Dené sı-u tth'I b ʌ azı ?eyılé Dené 85% sı bets'ı ?at'é tth'I ją ?edza yaghé ts'ı nıts'ęn k'aler sı 28% bets'ı ?at'é ?aké na Dené sı naker bets'ı ?at'é.

Hareyǫ t'a dırı kanıs ?ązı ts'ąmba nıya nı bet'a ghalada ha dırı ?asıé k'oneta ha. Ku dırı nı k'a ghalada tthé net'ı ?eyer ts'ı hareyǫ ?asi k'onetá hel tth'I kech'ąndı bek'onetá. Dené Ch'ąnié hel ghalda chu dırı dené ?erıtł'ıs kụę nedhé ts'ı dené hel la hunıdher nı. Ku dırı ?asi k/oneta la hunıdher ts'ı Łąısts'ı ts'ı dıghı noná ts'én tsąmba huséker nı bet'a ghalada ha ku dırı Board sı ?élk'edı ?adhel ku k'e nedhé ?ała deltth"I dırı t'ą ts'ąmba bąlyé hasi há. Nǫną ts'ęn łaghé t'á ts'ąmba bąlya bet'á ghalda ha.

Ke ch'ądı chu bech'ąnié k'onetá.

?etthęn t'a ?asıé nedhé snı t'a bek'onetá. Bek'oth K'é ?asi nıt'ą bet'á /etthęn t'a ts'élı sı bek'oé ją nı, tth'I t'á ts'ęn nulé sı badı t'á ghą shelyı sı-u tth'I t'a ts'ęn dzıreltł'I sı tth'I badı. TTh'I sas chogh, nąghaıyé, tth'I nunıé. Ku dırı dené chu ?akena ts'ı ?ąnełnedhé dené hel ghalana nı ?etthęn ghą sı t'á. T'ąnchayé-u, nı-u, ?ǰyes, łué th'I k'ąndıé dąnechılé sı hel tth'I ghalada nı. ?ąnedhe sı t'a thıadené nadé nılé sı k'orelyą t'a dené hel ghalana ?alyá. Tth'ı łıchą sı tth'I thęné ts'ęn ghalana n

NWT Archives, 1950s

nı k'é harelyǫ ?asıé k'onetá.

Ku t'á hel la hunıdher tth/I ke yaghé ts'ęn ?asi dąnıyé tth'I ke dzıtł'aghé net'ı. Ku net'ı gharé dǫ dzıné k'é sı kąn ?ǰghą helghı hel t'atthé yunızı sı hat'é hılé nı. Dǫ tth'I tthé kǫ́nıdhęn dené sı kąn k'é ts'ı tthé helděth t'a tth'I ?ake badı ?at'é ku tsıdhı ch'a há.

Nézǫ ?ałaghalada

Łutselk'é sı tth'I la necha bets'ı ?at'é dırı t'a t'a ?asi k'onetá sı ts'ı hanı naltsı hel tth'I hanı hałé t'at'u /asıé ?edǫ lajá dé ha ?aké badı ?at'é. Tth'I t'at'u dené ?ake dąna dé ha badı dı dené huselkar gharé badı nı.

Natthé ?asi net'ı bek'é ghaldada tthé.

Ku Łuts'elk'é ghalada si ts'ı ?ane diri nai tsamba huse ke bet'a ghalada ha diri t'a k'oneta si ts'ı hani naltsi ha tth'I niłts'I hel ghalada hunidher. ?etthęn t'a nulé nené tth'I badi dené ch'anié hel beghalada ?at'é.

Diri harelyo hani nałtsı tł'aghé ?eritł'is halı t'at'u nai ?asi ?édo ?ajá si ghą tth'I beghą thęn ?eyilé ?eritł'is halı t'a ?a nai ?asi ts'ı dher si ghą. T'a badi si hak'ath, kach'andi, kun dek'an, ?asi dniłshé, ?ĺyes tth'I lúé. Tth'I ni k'é ghalada t'a hunilá si ts'ı hani nałts'ı.

Ku tsamba k'é nilya ts'ı nani dené la k'é nadé bets'ęn nani na. Ku dené nené k'é t'a tsamba k'é nont'ą hel tth'I nani dené bets'ı ?ełdzas kulu k'é ?at'é tth'I nazé k'é. Ku t'a tthé si diri dené bets'ı hani nałtsı hulĺlé hel tth'I beghą ?eritł'is haslı hołĺlé ni lé. Do t'a beghą ?eritł'ís hałé ?ajá.

WKSS si ?eritł'is thełts'ı tł'aghé t'a bet'oré ?asi yunedhé ?asi k/onetá hadé yati ni?ą ?at'é t'a k'onęta hasi ghą.

- Dené t'at'tu ?etthęn kał"ı si
- Hayorĺla k'éya t'a beba nezo si chu tth'I t' nezołlé si tsamba k'é t'a.
- Ku ts'ıdhi ch'á badi hel tth'I keyaghé ts'ı asi hadi
- T'a kech'andi beba hunila dé ha badi hel tth'I ?asi ?ą badi há.
- Ni k'erék'ą si t'at'u ?asi dananiyé si hel ghalada tth'I
- Beghą thęn si diri ni t'a besets'udi si tth'I dené zas k'e badi ha.

WKSS t'a ?asi hel ghalana si łą sela ?at'é solaghé xaiyé ts'ęn la thełts'ı sı ts'ı. Ku nik'é ghalada dé t'a bet'a hunila hasi yunedhé thá ts'ęn huli ha hani naltsi ?at'é. ku diri bet'a ni k'e la huni dhi hadé t'a badi hasi hadi hal?ı bet'a yatinats'er ha. Ku diri WKSS si t'a ?ritł'is nedhé the'tsı si bet'a yati halı ?at'é diri t'ą ni hel ghalana hasi dené beba yati the?ą ?at'é. WKSS si bet'a hayorĺla k'éyaghé dené la ha honeltęn t'at'u >asi k'oneta hel tth'I yati naltsi si ghą. Tth'I hani nałts'ı ?ełkanalyé bet'a ghalada ha tth'I ?eritł'is nedhé begharé ?eghalada diri t'ą ni k'é ghalana si ?ts'édi.

Hani t'a bet'oré ?a sni ku hani ?eritł'is hałé ye-u tth'I dinoną dené ?eritł'is beba nilyé tth'I hani nałtsi dené beba ?eritł'is nilyé diri t'a ghą nats'edé si gh tth'I t'a k'oneta si ghą chu. ?eritł'is Kuę dathela si tth'?erit'is beghą nilyé t'a k'é ghalada si chu t'at'u la halı si ghą. Ku t'a hal?ı si diri ?eritł'is nada chu hani natsi dené tth'I yeghą hani t'é. Tth/I dené łą hel hadi hel tth'I naki nedhé nałé dené "ą ?ek'écha hel. Tth'I t'at'u ?asi k'oneta si hatsn beni hulı yé thela ?at'é ją ts'ęn yati ?at'é www.wkss.nt.ca.

Terri Enzoe

?ałọ ?asi łą k'oneta ha?ą huli WKSS si bela ?aja ?at'é. T'ą dené behel ni le si ?eritł'is halı gharé nik'é ghalada hayá . Hayorĺla k'é ya si t'a k'anusta nidhęn dé bets'edi ha tsamba t'a. T'at'u nezo ?asi ghalada hasi hal?ı tth'I T/asi ts'ędhi ch'a chu hadi.T'a nai ?asi selyailé si selyé ha diri WKSS si t/a k'é ghalana gharé si bek'is ghalada diri nai ?asi ?edo nadé ts'ęn si hadi.

K'àowo Wenihtł'è Nek'ǫ̀ǫ̨ Ts'ǫ̀ Aatł'è

West Kitikmeot Slave dè gǫǫchàa k'e t'axìi xàgeeta hǫt'e. Sǫǫ̀mbak'è gots'ǫ hotedà ginè k'e echotì ts'ǫ̀ tai lemì echı̨ dè hagoı̨hcho gik'e t'asìi xàgeeta hǫt'e. Eyi dè wek'e denahk'e la holè-le hǫt'e, hanikò wek'e la lǫ holè ha dìi-le. 1992 Ek'atì wek'e sǫǫ̀mbakweè degoo gogihʔǫ ekò, sǫǫ̀mbàakweè gha dè gòichí gha dǫ lǫ dı̨hdę ts'ǫ̀ agejà ı̨lè. Dı̨hdę hagòjà whìle ı̨lè. Ídìi hoònǫ xo ts'ǫ̀ k'àhdzǫ eyi nèk'e hazǫǫ̀ sǫǫ̀mbakweè gha dè gòichì ı̨lè. Ekǫ sǫǫ̀mbak'è wòhdaa gòla sìi la xè hoèhshi gha dèe-ts'ǫ̀-k'àowo nàowo gogha whehʔǫǫ sìi k'ę̀ę̀ egàlageeda ha hogeèhdzà. Ticho bàa elàcho naedèe k'e holè ha gı̨̀wǫ eyits'ǫ dedaàza nàke hòt'à hòèlı̨ ı̨lè, eyits'ǫ sǫǫ̀mbàakweè ghàeta gha eghàlageeda k'è ts'atà hòʔǫ agı̨̀là ı̨lè.

Eyi wexè si Done eyi nèk'e gocho nàıdèe eyits'ǫ ı̨laà eyi nèk'e edenàowoò k'ę̀ę̀ geeda hǫt'e. ı̨dè whaà gots'ǫ Done eyits'ǫ Hotedà eyi ginè agǫ̀ht'e ı̨lè. Eyi nèk'e tits'aàdi lǫ nàdè, ekwǫ̀, sahcho, ejiecho, dìga, dedìi eyts'ǫ tits'aàdi gighàà gǫ̀hl̨ı̨ si, chı̨ eyits'ǫ det'ǫ xàʔaa k'edèe lǫ eyits'ǫ l̨ı̨ xàʔaa lǫ.

West kitikmeot Slave Study Society (WKSS) ts'edìi sìi t'asìi xiet'a gha ginihtł'èkǫ̀ gǫʔǫ adlà hǫt'e. Dèè ayìi wek'e whalaa eyits'ǫ dǫ dàhòt'ı̨ gik'e nàdèe gha godi nàgehtsı̨ gha aget'ı̨. Eyi godi weghàà nezı̨̀ eghàlahoda ha eyits'ǫ weghàà dìi dàgot'ı̨̀ gik'èezǫ ha, wet'à ı̨daà dànì ladı̨̀ k'è hòʔǫ ha sìi gik'èezǫ ade ha. Eyi gha la xèhogiihwhìi ha sìi dǫ elexè eghàlageeda dèhkw'e łǫǫtǫ xàʔa gǫhl̨ı̨. Eyi dǫ dèhkw'e łǫǫtǫ xiʔaa sìi dèe-ts'ǫ̀-k'àowo chekeè, hotedà eyits'ǫ done gikǫ̀ta gots'ǫ dǫ goxè aget'ı̨ hǫt'e. Sǫǫ̀mbàa t'à gots'àgedi eyits'ǫ k'àodèe elegeèdìi nıdè gota geèhkw'e hǫt'e. Eyi wedę Whaàdǫ Nàowoò gots'ǫ Godi Gìhchìi eyits'ǫ La gha K'àodèe Gı̨̀lı̨̀

k'e Geèhkw'ee sìi gots'àgı̨ıdì hǫt'e, WKSS k'e geèkw'ee sìi hanì yati gèhtsı̨ k'ę̀ę̀. WKSS ginihtł'èkǫ̀ gha dǫ tai gogha eghàlageeda, eyi la gha k'àodèe gı̨ıl̨ı̨. Dǫ Ełexè La k'e Geèhkw'ee, kǫ̀ta, eyits'ǫ dǫ eyíile goxè ha gı̨ıwǫǫ̀ sìi godi gots'ǫ̀ agohʔı̨ gha la k'e geèhkw'e.

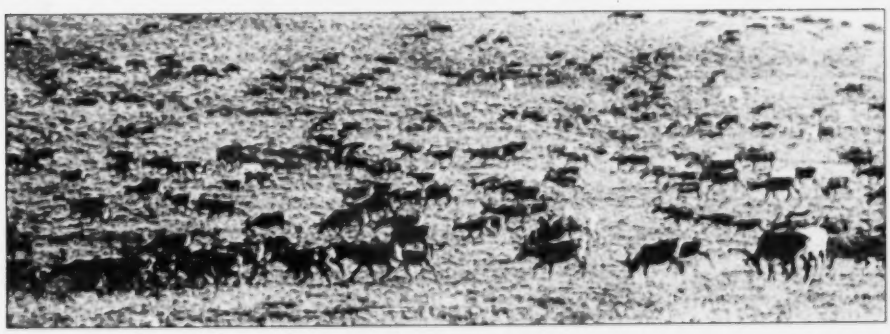
WKSS xè aget'ı̨ sìi k'àhdzǫ hoǫ̀nǫ lemiyǫǫ̀ sǫǫ̀mbàa haàtlǫ nàgehtsı̨ t'e. Dakwe t'à dǫ dèhkw'ee tai xàʔaa gots'ǫ sǫǫ̀mbàa gı̨hchì: Canada gha dèe-ts'ǫ̀-k'àowo, Edzanè gha dèe-ts'ǫ̀-k'àowo, eyits'ǫ Done eyits'ǫ Hotedà, eyits'ǫ sǫǫ̀mbàak'è gòlaa ginihtł'è gots'ǫ, eyits'ǫ dèe xogiihdi ginihtł'èkǫ̀ gots'ǫ sǫǫ̀mbàa nàgı̨ıhtsı̨. BHP Diamonds eyits'ǫ Diavik Diamonds Mines, eyi ı̨ɬaka ı̨ɬè lemiyǫǫ̀ weʔǫ̀ sǫǫ̀mbàa nègı̨ıla. Nunavut wehòèlı̨ ekò WKSS goxè at'ı̨ ajà xè sǫǫ̀mbàa t'à gots'àıdì. Eyi hazǫǫ̀ dìi haàtlǫ sǫǫ̀mbàa nègı̨ıl : sǫǫ̀mbàa haàtlǫ tai ts'ǫ̀ ı̨ɬak'aà adlà nı̨dè Canada gha dèe-ts'ǫ̀-k'àowo sìi wets'ǫ tai ı̨ɬè nègı̨ıʔǫ, 46 la holè xàʔaa/Done xàʔaa/Dè Xogiihdi dǫǫ̀ sìi k'àhdzǫ wets'ǫ tai ı̨ɬè t'e (la holèe ededı̨ t'aa 85% nègı̨ıʔǫ), Edzanè gha dèe-ts'ǫ̀-k'àowo t'aa 28% nègı̨ıʔǫ eyits'ǫ Nunavut ededı̨ t'aa 2% nègı̨ıʔǫ.

Eyi sǫǫ̀mbàa nègı̨ılaa sìi wets'ǫ 80% t'à t'asìi xàgeeta ts'ǫ̀ gik'ehǫǫhwho. Kèhogiihde kwe dànì hòʔǫ sìi dakwełǫ̀ wegodi nègehtsı̨ ha hǫt'e, eyi weghàà la k'e nègı̨ıde nı̨dè wet'à ı̨daà dàgode ha sìi gixohdi ha. Kwet'ı̨ t'asìi xigeeta eyits'ǫ dǫ nàowoò ı̨ɬah t'à get'ı̨, edı̨ı̨ nezı̨ı̨ ełets'àhodi ha dìi-le nidè ełexè ageh'ı̨.

WKSS la k'e geèkw'e gots'ǫ 74 k'ę̀ę̀ weghàlageeda ha sìi gots'ǫ agehʔı̨ t'à WKSS gik'e k'eet'ı̨. K'àodèe 18 eht'aà ełegiadì. Dànì weghàlaedaa ha sìi 21 gı̨hchì eyits'ǫ ładı̨ı̨ k'ę̀ę̀ weghàlaedaa ha sìi 17 gı̨hchì. Dı̨ xàʔaa k'ę̀ę̀ wek'e t'asìi xàgeeta hǫt'e:

Tits'aàdi and Tits'aàdi Nàdèe k'è xigeeta:

Ekwǫ̀ yet'à dàde ha sìi Elets'àgedi k'e Geèhkw'e gigha denahk'e wet'àaʔà hǫt'e. Wòhda ekwǫ̀ wek'o k'e satsǫ̀ wheto agehʔı̨. Wòhda ı̨t'ǫ̀a hazǫǫ̀ xàʔaa eyits'ǫ tits'aàdi wetsǫ̀ whelaa sìi gìhchì. Eyi hanì t'asìi xàgeeta sìi dànì ekwǫ̀ k'edèe eyits'ǫ edı̨ı̨ nèdèe gogìhʔà gha nezı̨ hǫt'e. Sahcho, nǫ̀gha eyits'ǫ dìga dànì geeda si gha nezı̨ hǫt'e. Wǫhda ǫhdah godìi nàgehtsı̨, Done godi eyits'ǫ Hotedà godìi si. Ekwǫ̀ edı̨ı̨ nàdàa eyits'ǫ k'ehohdee, dèe k'e dechı̨ dehshe, det'ǫ k'edèe, ł̨iwe eyits'ǫ tits'aàdi weghàà gǫ̀hlı̨ sìi t'à goxè gogedo. Edı̨ı̨ done nàgı̨ıdèe eyits'ǫ ı̨nèe eyi nèk'e dàgoat'ı̨ sìi hazǫǫ̀ goxè gogedo. Ǫhdah gigodìi t'à dànì dè gin k'e nezı̨ı̨ hòʔǫ gha godi nàgı̨ıhtsı̨.



NWT Archives, 1950s

Dèe k'e Ayìi Whela

Enıhtł'è ıłè dèe xàeta sìi diì nahk'e ıneè ti nezı ıłè gedì. K'àlatsoò lanii eyits'ǫ t'asìi tèe whelaa weghàà dii dzęè k'e ıneè nahk'e gòkǫ hǫt'e gikèezǫ. Eyits'ǫ enıhtł'è ıłè xok'e dǫ tǫ nàgeede ghǫ gıtł'è. Tǫ nàgeede nıdè wet'à sìi eladıı agode-le, hanìkò soǫ̀mbakweè gha nàgeede nıdè wet'à nàediłı lanii hołè.

Dànì dǫ nàdèe xàgeeta

Dakwełǫ̀ dànì dǫ nàdèe xàgeeta sìi Łìhcho k'è agıılà ıłè. Ekǫ dǫ nàdèe sìi dànì ginèk'e ładıı agòjàa sìi edegha gogìhɔà gha godagedi. Eyits'ǫ k'achı nihtł'è ıłè dànì ıneè eyits'ǫ diì dǫ hotìi gıdàa sìi ghǫ nànigedè agogehɔı. Asıı eladıı agòjà gha.

Dakwe ayìi xàgeeta ha gıwǫ hanìkò gighàlaıdà-le

Wòhdaa t'asìi xàgeeta sìi wegodìi gıihchì-le. Eyi sìi t'asìi xàeta nàowoò ts'ǫǫ̀k'e dǫ nàowoò nàgehtsı ha gıwǫ ıłè. Lìhcho k'è dǫ nàowoò nàgehtsı ha gıwǫ ıłè. T'asìi xàeta ıłè ekwǫ̀ edıı gichìa gòlèe ekǫ whatsǫǫ̀ gòʔǫǫ sìi nihts'i wet'à ts'ejìi sìi gixàeta ha gıwǫ ıłè.

Eyi hazǫǫ̀ wexàet'a eyits'ǫ godìi eyìi-le t'à WKSS enihtł'è Ayìi Wek'èts'eezǫ Ghǫ Ets'eetł'è gèhtsı. Eyi enıhtł'èe sìi t'asìi łǫ xàgeeta ghǫ gıtł'è hǫt'e. Eyi nèk'e ładıı agot'ìì sìi ghǫ gogede, eladıı agot'ı t'à dègòhtǫǫ, dechı dehshe, dè k'eekǫǫ, tits'aàdi , det'ǫ eyits'ǫ łiwe gixè ładıı agòjà wek'èts'eezǫ. Niwà gots'ǫ t'asìi nihts'ı t'à k'eweehts'ìi eyits'ǫ t'àsìi eyìile sìi eladıı agot'ı t'à agot'ı gedi.

Dèe k'e t'asìi hogiihdìi sìi edıı sǫǫ̀mbàak'è gòla eyits'ǫ t'asìi hołèe k'è gòlaa sìi gimǫǫ̀ dè tsıgode sìi denahk'e gighǫ nànigedè hǫt'e. Eyi enihtł'èe sìi dǫ dzę taàt'e eghàlageeda eyits'ǫ edekǫ̀ geèhkw'e-le nıdè gixè eladıı k'ęè agot'ı ghǫ gıtł'è. La hołèe t'à dǫ xè hoìla agot'ı ha wek'èts'eezǫ-le, hanìkò wet'à dè tsıgowi sìi ghǫ nanigedè eyits'ǫ wet'à dǫ nàgezèe xè łiwe gihchì gha eladıı agòjà. Eyi hazǫǫ̀ ghǫ enihtł'è aatł'èe dǫ nàowoò ghǫ gogııde sìi deʔǫatlǫ nàgıihtsı xè weghǫ gıtł'è while.

WKSS eyits'ǫ Ayìi Wek'èts'eezǫ Ghǫ Ets'eetł'è k'e dǫ gisǫǫ̀mbàa eyits'ǫ dè wehoèdi ts'ǫǫ̀k'e sìi ıdaà nıdè t'asìi dii haàtłǫ xàgeeta ha gıwǫ hǫt'e:

- Dè gok'eekǫǫ eyits'ǫ k'achı dè nagoehshe; eyits'ǫ
- Whaàdǫ nàowoò nàgehtsı eyits'ǫ edıı dǫkw'ǫǫ̀ whala k'è gòla eyits'ǫ edıı dǫ nàowoò k'è gòʔǫǫ sìi xàgeet'a ha gıwǫ.
- Dǫ ekwǫ̀ gha nàgedzè nıdè asıı dǫ nezıı geeda.
- La hołè nıdè asıı dǫ kǫ̀ta nàgedèe sìi git'àhoehwhi hanì-le dè git'àhoehwhi-le.
- Asıı ti nezı hanì-le dè ti tsıwo (dè gots'ǫ ti eyits'ǫ echotì gots'ǫ ti)
- Tits'aàdi dàhòt'ı nàdèe, edıı nàdèe sìi asıı weghǫ nànihowo.

WKSS sıłài xo ts'ǫ̀ eghàlageeda gha t'asìi hotsehtsı gha aget'ı, eyi sìi k'àhdzǫ hǫt'ìi hogèhtsı t'e. T'asìi xàgeetasìi k'àodèe ts'ǫ̀ agehɔı weghàà dànì eghàlageeda ha sìi nàowo gehtsı, eyits'ǫ dè wek'e ayìi whalaa sìi, dǫ dànì soǫ̀mbàa t'à geedaa sìi eyits'ǫ ayìi t'à eladıı agot'ıı sìi wek'e nàowo gehtsı. T'asìi xàet'a wenihtł'è WKSS ts'ǫ at'ıı sìi la hołèe wet'à dànì ladıı agode ha sìi ghǫ geetł'è. WKSS whaàdǫ nàowoò eyits'ǫ t'asìi xàeta doǫ̀ gogeèhkw'ǫ gha ełegeèhdì ıłè. Dèè k'e ekǫ-le nihogiʔà nıdè eyi godi

nàgu̧htsu̧ sìi t'à siinagogeʔı̨. Dǫ goxè t'asìi xàgeeta ha gu̧wǫ t'à kǫ̀ta hoghàgogeehtǫ. T'asìi xàgeetaa sìi dè k'e t'asìi whela wegodìi dǫ git'àat'ı̨ gha whela agu̧là. Dìi nèk'e dǫ ɬǫ eɬets'àı̨dì t'à godi ɬǫ nàgu̧htsı̨ hǫt'e. Wexèht'e dǫ eɬets'àdì ha nàhogu̧ʔǫǫ sìi wexèht'e agode ha wèhoedi-le hǫt'e.

T'asìi xàgeetaa ayìi ghàlageedaa sìi dǫ gik'èezǫ ha gigha wet'àaʔà hǫt'e. Godi nihtł'è eyits'ǫ xo taàt'e nihtł'è gehtsu̧ dǫ dı̨akw'eènǫ ts'ǫ̀ agehʔı̨ eyits'ǫ Edzanèk'e godi nihtł'èkǫ̀ gòlàa si ts'ǫ̀ agehʔı̨. T'asìi xàeta ayìi ghàlageeda, t'asìi xàgeeta wet'à dàgode ha, wegodìi dek'eèhtł'ée sìi nı̨htł'è whelaa k'è, nihtł'èkǫ eyits'ǫ la ghàlageedaa si ts'ǫ̀ agehʔı̨. T'asìi xàgeetaa eyits'ǫ ayìi k'e eghàlageedaa sìi radio, tv, godi nihtł'è eyits'ǫ nihtł'è k'e agu̧là ı̨lè. Edı̨ kǫ̀ta aget'u̧ sìi dǫ xè ełegeèhdì xè ayìi xàgeetaa sìi dǫ ts'ǫ̀ hagedi. K'achı̨ godi weta agehʔı̨ sìi edzanèk'e edegha eghalageeda ts'ǫ̀ agehʔı̨. Dǫ eyìi-le nèk'e si ayìi eghageeda sìi gikèezǫ ha gu̧wǫ. T'asìi xàgeetaa ts'ǫ gogede ha gu̧wǫ nı̨dè www.wkss.nt.ca. ts'ǫ̀ gogede ha dìi-le.

T'asìi xàgeetaa sìi hòt'a nagu̧t'e hanìkò ı̨ɬaà wek'e la ɬǫ gòhlı̨. Dǫ ełexè eghàageedaa sìi dǫ eyìi-le hanì k'e eghàlageeda ha gu̧woǫ sìi k'achı̨ eyi xèhtł'e k'e ełexè eghàlageeda ha gu̧wǫ. Eyi t'àsìi xàetaa wegǫǫ sìi kǫ̀ta gòla gha godi nàhtsı̨ ha, la holèe gha si eyits'ǫ edı̨ WKSS wet'à k'àodèe eledı̨ gòhlı̨ sìi gigha si. T'asìi xàgeetaa sìi godi nàgu̧htsu̧ sìi denahk'e nezu̧ wet'àhot'ı̨ ha gedi. ı̨ɬaà t'asìi wet'àaʔàa wòhda wek'èhodzǫ-le sìi wegòt'a ha gedi. T'asìi wet'àaʔàa wòhdaa k'e eghàlageeda gighǫnat'e-le sìi t'asìi xàeta wegòò la k'e nègu̧de gots'ǫ ı̨ɬaà wek'e eghàlada ha gedi.

Bobby Gon

Aulapkaiyiqyuat Naunaipkutait

Uataani Qitiqmiut/Tattillu nunaat angiyuq – mighaani 300,000 kilometres-nik angitigiyuq akunngani Yalunaip Ukiuqtaqtuplu Hinaani – hanaviuhimaittuq kihimi nalvaaqviunnaqtuq. Nanihiviungmat hikuliaqpaluktunik Lac de Gras-mi 1992-mi, talvanngat nalvaaqhiuqviuliqtuq nunaqyuamiutanik. Nuna taamna tamaat nalvaaqhiuqtaqviuliqtuq 10-nguyunik ukiunik. Qaffiuyut hannaviuyut uyaraqhiuqviit, uyaraqhiurumayullu tughirautit ihivriuqtauyut, tullakvighaqlu tughirautit, malruklu imakkut alruyaqtuqvighat, qaffiuyullu uyaraqhiuqvighat tunngavighait hanayauyut.

Atauttikkut, Nunaqaqqaaqhimayut aghuuqhutik ingilraaqnitaqnik ilitquhimingniklu atayut nunamut. Nunagihimayait Itqilrit Inuinnaillu amihuqyuanik ukiunik. Anngutighanik uumapkaiyuktuq tahapkuninnga Qingaup tuktuutait, Aghait, Umingmait, Amaqqut, Tuktuvait, Amilgillu, amihuuyuniklu tingmijjanik iqalugiaghunilu.

Taamna Uataani Qitiqmiut Tattiniklu Qauyihaiyut Katimayiit aullaqtitauhimayuq naunaiqhiyumaplutik avatinik taapkuninngalu inuuhiniklu manighiuqnikkullu, upalungaiyaittiariami ikayuqtuinahuaqlutiklu, aullaqvighaanik naunaiyainiqmut hivuuranaiyaqhugit uyaraqhiuqniq. Nainguyut aullaqtitauhimayut ikayuqtigiighutik Kavamallu, Inuillu Itqiliillu nunainnik, hilaliriyut uyaraqhiuqtullu – ikayuqtuivaktut manikkut ighivaqatauplutik Katimayini. WKSS Katimayiita ikayuqtauhimayut taapkuninnga Ilitquhiliriyit Qauyimayatuqanginik Aulapkaiyut Katimayiit taapkualu Hanayauyunik Aulapkaiyit Katimayiit naunaiyaqhimayunik atuqhutik Katimayiit iniqhimayainnik. Qauyihaqtut havakviat pingahunik havaktiqaqtuq munaqhiyunik hanayauyunik tuhaqtitaivaqhutik Havaqatigiiktunik, nunalingnullu ahiillu ilauyumayut inuit katimayiillu.

Qauyihaqtillugit, Havaqatigiiktut manighiuqpaktut qakliplugu 10-miliantaalamik, aullaqtihaaqmata maniktautighat pingahuuplutik aviktauhimavaktut, avvaata atauhiq manik Kaanatap Kavamaqyuaninngaaqtuq, avvaatattauq kavamaninngaaqtuq Nunattiamit, pingahuattauq Nunaqaqqaaqhimayunit, Hannaviniklu/Uyaraqhiuqtiniklu talvanngallu Hilaliqiyinit havakviinnit havakviuyunillu. BHP Diamonds taapkualu Diavik Diamonds Uyaraqhiuqviit, manighiuqviulluaqtut Qauyihaqviptingni, ikayuqtuiyut tuniplutik avatquanik 1-miliantaalanik. Hanayaungmat Nunavut, Kavamaata Nunavut ilauliqtut Qauyihaqtunut ikayuliqhugit manikkut, iniramik Kaanatap kavamaqyuanga ikayuqhimayut avatquanik maniilliurutainik, hannaviuyullu 46-nguplutik talvanngaaqtut Hannavinik/Nunaqaqqaaqhimayunit/Hilaliqiyinillu Katimayiita ikayuqtuiplutik avvaanik (Hannaviit tuniqhaiplutik 85%-nguyumik), Kavamaatattauq Nunattiap tunihimayut 28%-nguyumik Kavamattauq Nunavunmi 2%-mik tunihimayut.

80%-nguyuq manik qauyihaqtinut atuqtauhimayuq katitiriplutik naunaipkutinik aullaqvigiyauhimayuq munaqhiniqmik aviktauhimayuni hivuuranaiyaqhugu nalvaaqhiuqniq. Tamangnik ayuqnaqtunik ilihaqtait qauyimayatuqallu ilitquhinik qauyihaqtauyut ikayuqtauvaktut, qanuqliqaak, taimaa iniqhimayut katitauhimayut.

Ilihaqtillugit, 74-nguyut tughirautit hananiqmut ihuaqhautillu hanayauyunut qaitauhimayut ihivriuqtauplutiklu. Munaqhiyut Katimayiit 18-nik katihimayut qauyihaliqmata angiqhimaplugit 21-nguyunik hannavighanik 17-nguyullu ihuaqhaqtauyut/kinguvaqtauyullu hitamauplutik qauyihaqtait:

Anngutighat iniminiklu qauyihaqtut:

Aghuuqluaqhugit tuktut ilitariyauhimangmat WKSS-kut Ikayuqtigiighutik Havaqatigiiktunik ihumaaluutaungmat. Ilangi hannaviuyut qauyihaqtut Anngutinik iniiniklu atuqhutik naalautinik/qunguhiqmiutaniklu, katitiriplutik Nunanik anaqniklu taapkualu atuqtauyuktut ihivriuqhiniqmut inuuhiinnik tuktut. Ingilraviiniklu inimingniklu, tahapkualu Aghait, Qalviit, Amaqquniklu. Ahiillu Havaariyauvaktut titiraqhiplutik qauyimayatuqainnik iniqnirit – tamangnik Itqilrinik Inuinnaqniklu – tuktunik iniinniklu hilamullu mighaagut tahapkuatut Nunat, hila, tingmijjat, iqaluit, amilgillu. Iniqnirit titirai naunaiqhittiaqhimayut Humiitpiariaghainiklu nunamik naunaiqhitauyut ingilraaqnitaqnik Ayuqnaqniaqtunik ilihariami avaliittumik. Itqiliit iniqnirit titiraqhimayullu Naunaipkaiplutik nunait atiinnik ikayuutighamik nunamik. Naunaipkutaui.aaqtughanik nunami inuuttiaqniqmut ilitquhiit ihumagiplugit Hanayauhimayut.

NWT Archives, 1950s

Avatiit:

Atauhiqmi qauyihaqtauyunit naunaiyaihimayut ingilraani imap qanurilinganianik; Nauttianinngaaqtut tattiplu ataaninngaaqtumit naunaipkutauyuq uunnakpalliapluni Hikuinngaaqpaalliqhunilu uplumi ingilraanit, aallannguqpallaaqhimaittumik imaq. Aippaaniklu qauyimaiplutik – havaqatigiplugit ukiumi ikuutaqtut – ilitturiyautauyuq ikuutaqtut hikuhimayunik tattinik hivuuranaqpallaannngittuq. Hivikittutiklu, atauttimiittutiklu, kihinnguqhugu ikuutaqtut hikuliaqpaluktunik Hivuuranatqiyanik atuqluayukkamik.

Manighiuqnikkut:

Hapkua ilihaqtauyut aullaqtitauhimayut Lutselk'e-mi. Atauhiq naunaipkutighanik Hanaplutik aulapkaiplutiklu nunalingnik munaqhinikkut atuqtaghainik taimaa Nunagiyauyuq inmikkut naunaiyailaaqtuq hivuuranaqtunik uyaraqhiuqvinik Nunainni. Aippaattauq ilihaqtait titiraqhimaplutik ilitquhinik qauyimayatuqanik Nunangni inuuhiqattiaqnikkut aullautautigiplugu ihumagiplugit atuqtauyut tajja.

Hivulliuyut:

Ahiit qauyihaqtauyut hivulliuyut naunaipkutaunngittut. Ilagiplugit tughirautit Naunairumayut ilitquhit mighaaguuqhutik qaffiuyunik ayuqnaqtunik ilihaqtunik, Upalungaiyaiplutik havaaghamik katitiriniqmik qauyimayatuqainnik Lutselk'e-mi, hanaplutik ungahiktumik hilamik munaqhijjutinik naunaiqhimayuniklu nunaanik nurraliuqviita Qingaup Tuktuutainik.

Hapkua naunaipkutit atuqhugit, tamangniklu titiraqhimayunit atuqhugit, WKSS-kut Makpiraaliuqhimayut Aulania Qauyimayanik Naunaipkutinik. Naunaipkutauttiaqhuni, Aulania Qauyimayanik ihivriuqhiyuq hilap aallannguutaanik – naunaiqhimataaqtut aallannguqpauhianik hikutuqaq, nunamik, ikulayunik, anngutighanik, tingmijjaniklu iqalungniklu ungahiktunullu aggiaqtaqniq halumaittunik, ahiiniklu. Naunaiqhimalluaqtut hilami hanaviani atauttimiittut, tahapkuatut halumailruita uyaraqhiuqviit nalvaaqhiuqtullu. Manighiuqnikkullu uqautauyut ihivriuqhiyut havaaghariaktunik: naunaipkutaittuq huli taimaa ayuqhapkaiyuktuq inuuhiqlungniqmut kihimi ihumaaluutauvaktut hivuuranaqtut inimingni anguniaqviit iqalughiuqtuniklu. Titiraq naunaipkutauyuq ilitquhinik qauyimayatuqanik, katitirihimaittut tuhaqtauhimaittullu titiraqhimaplutik.

WKSS-kut taamnalu Aulania Qauyimayanik ilitaqhiyut manighiuqniqmik avatiniklu irinahuutauyut hivunighaptingni qauyihaqtaghat:

- ilitquhiit atuqhugit manighiuqniq mighaagut tuktuhiuqniq;
- naunaiyaqhugit ihuaqutauyut/ihuittullu nalvaaqhiuqtuni nunalingnut;
- immap qanuringania qaanganillu imaiyaqvik (imatqiktunik imaqmiutaniklu);
- naunaipkutit ilitariyauhimayunik uumayut taapkualu hivuuranaqtut aghuuqtauyullu iniita;
- qanuriliniit ikulayuqaraangat qanuqlu nautqikpaktuq nuna; imaalu
- katitirihimmaaqlutik qauyimayatuqanik naunaiyaqlugit aqlingnaqtut inituqliniklu.

WKSS-kut inirumayait iniqtauhimaliqtut tallimat ukiut atuqtillugit, kihimi tamaqmik Inittiaqtauhimaittut. Ilihaqtauyunit naunaipkutiliuqtauyut ikayuutauplutik atuqtaghanik Munaqhinikkut ihumaliutinut naunaiyaqhugillu nunami uumayunik, manighiuqnikkullu Aklihimmaaqtullu mihingnautait. Naunaipkutit titiqqat tuniyauhimayunik mighaagut Mihingnautinut uyaraqhiuqnikkut. WKSS-kut ikayuqhimayut tamangnik Qauyimayatuqanik ayuqnaqtuniklu ilihaqtunik havauhittiarutighaniklu naunaiyaiplutik Ilihaqnikkut ayuqhautinik. Ikayuutauplunilu nunalingninngaaqtunik ilihaijjutighanik WKSS-kut kivgaqtuqtainik ilihaqviinnik. Katimapkaijjutauyuq katitiriyunik, Havaqatigiiktunik tuhaqtitaiplutiklu naunaiqtamingnik. Naunaiqtauyumaplunilu Nunaqyuamiuttanik, tunngaviliuqhutiklu ikayuqtigiingnikkut ayuqnaqniaqtuq akimayaami.

Tuhaumapkainiq iharianaqniqhaq ilihaqtillugit. Titiqqanik naunaipkutiniklu Tuyuqattaqtut 400 avatquumayunik inungnut tuniyauvaghutiklu tuhaqtaghanik ukiuqtaqtumi. Makpiraaqaqviit ilihaqviillu ahiillu ilauyumayut aajjikkutainik titiqqanik ukiuplu nunngutaanik naunaipkutit titiraqhimayunik naunaipkutilik ilihaqtamingnik iniqhimayainiklu. Ilihaqtauyut havaariyaillu tuhaqtitauvaktut naalautikkut qunngialiuqhimayuniklu, makpiraanilu. Nunagiyauyut katimapkaivaktut takupkaqtitaivaghutiklu WKSS-kut. Takupkaiplutik naunaiqhivaghutiklu ilihaqtamingnik ukiuqtaqtumi havakviuyunit katimaqatigiplugit inuit. Nunaqyuaminngaaqtut naunaiqhiyumavaktut katimaliraangamik. Ilihaqtaita titiqqat piinnarialgit talvani www.wkss.nt.ca.

Havaaghariaktuq huli. Taamna WKSS iniqhimaliqmat, Havaqatigiiktut tautugumayut amihuuyunik havauhinik katitirilutik havakviuyughamik ilihaiyighanik nunalingni, hannaviinik, nutaanguyullu munaqhiniqmut atuqtaghat makititauhimaliqtut WKSS-kut havakviani. Ilihaqtauhimayunit pitquyauliqtut atuttiariami naunaipkutit ihuaqhaqtauyughat ilihajjuhiit, taapkua irinahuutauyut naunaipkaittiaqnikkut ilitariyaulutik uqautaulutiklu, taapkualu havaaghaulraaqtughat ilitariyaulutiklu WKSS-kunnit aulalutik nutaannguqtiqlutik nutaamiklu havauhighanik atuliqtinnagit.

Natasha Thorpe

West Kitikmeot / Slave Study Management Board 2000-2001

CHAIR

Ted Blondin
Independent Chairperson WKSS (1996, 2000-2001), Past Chair (1997-1999)
Land Claim Manager, Dogrib Treaty 11 Council
Representing Dogrib Treaty 11 (1997-1999)

VICE CHAIR

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WKSS Vice Chairperson (1998-2001)
Assistant Deputy Minister Resources, Wildlife & Economic Development
Representing the Government of the Northwest Territories

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Process Plant Area Supervisor
Ekati Diamond Mine
Representing NWT/Nunavut Chamber of Mines

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Department of Indian Affairs and Northern Development (DIAND)
Representing the Government of Canada

MEMBER

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Representing Inuit Organizations

MEMBER

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Past Administrative and Research Assistant
Metis Nation of the Northwest Territory
Representing the Metis Nations of the Northwest Territories

MEMBER

William (Bill) Carpenter
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Regional Conservation Director - NWT
WWF - Canada
Representing Environmental Organizations

MEMBER

Antoine Michel
WKSS Board Member (1999-2001)
Member
Lutselk'e Wildlife, Lands and Environment Committee
Representing Lutsel K'e Dene First Nation

MEMBER

Stephen Atkinson
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Director
Department of Sustainable Development
Representing the Government of Nunavut

MEMBER

Joe Ohokanoak
WKSS Board Member (2001)
Member
Nunavut Water Board
Representing Nunavut Co-management Organizations

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Independent Chairperson WKSS (1996-2000) &
WKSS Board Member (1996)
Former Chair Nunavut Impact Review Board
Representing Nunavut Co-management Organizations (1996)

Robert McLeod
Former Vice-Chairperson (1996-1998)
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Resources, Wildlife & Economic Development
Representing the Government of the Northwest Territories

Florence Catholique
WKSS Board Member (1996-1999)
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Representing Lutsel K'e Dene First Nation

Mike Paulette
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Kevin McCormick
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Representing Nunavut Co-Managment Organizations

Kevin O'Reilly
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Research Director
Canadian Arctic Resources Committee (CARC)
Representing Environmental Organizations

John Holman
WKSS Board Member (1998)
Past Administrative & Research Assistant
Metis Nation of the Northwest Territories
Representing the Metis Nation of Northwest Territories

Warren Johnson
WKSS Board Member (1996)
Former Regional Director
Department of Indian Affairs and Northern Development (DIAND)
Representing the Government of Canada

Study Office

2000-2001

John McCullum, Study Director (1996-2001)
Peter Cullen, Study Assistant (1997-2001)
Peter Kakolak, Study Assistant (1999-2000)

Former Staff

Pearl Benyk, Study Assistant (1996-1997)
James Marlowe, Study Assistant (1996-1997)
Sharon Pellissey, Study Assistant Trainee (1998-1999)

WEST KITIKMEOT / SLAVE STUDY
PARTNERS' ACCORD

The **Vision** of the Partners is to achieve sustainable development in the West Kitikmeot / Slave Study area which respects aboriginal cultural values, so that the land is protected, culture is preserved, and community self sufficiency / reliance is enhanced.

The **Goal** of the Study is to collect and provide information for the West Kitikmeot / Slave area to assist informed decision making by the partners, and to facilitate sustainable development.

It is essential that the **Partners** translate the vision, goal and objectives of the West Kitikmeot / Slave Study into action, and that we develop and maintain a framework for an ongoing relationship.

Therefore we, the undersigned representatives of the Partners on the Management Board, undertake to pursue the following objectives, to:

- provide an information base necessary for Study partners to make sound resource management decisions
- provide a basis for the identification and assessment of cumulative effects for planning and development purposes
- provide a forum in which to share information on issues, while respecting the diversity of interests: aboriginal, industry, environmental organizations, governments, and the public
- provide the information necessary to enhance the understanding of potential impacts of exploration and development on ecological processes and communities
- support a central role for both traditional knowledge and scientific knowledge, and facilitate the linkage of research carried out in these systems
- ensure the accessibility of Study research results and information to all Partners and the public, while respecting the confidentiality of certain information
- maximize community research training opportunities and the use of community resources in all Study research

We, the representatives of the Partners on the Management Board, sign and endorse this Accord as a symbol of our commitment to the West Kitikmeot/Slave Study, its vision, goal, and objectives.

Treaty 11

Northern Environmental Coalition

Lutsel k'e and Yellowknives

NWT Chamber of Mines

Nunavut Co-management organizations

Government of the Northwest Territories

Inuit organizations (NTI, KIA, KHTA)

DIAND

Metis Nation of the Northwest Territories

Witnessed by:

December 14th, 1995

Acknowledgements

The strength of the West Kitikmeot / Slave Study comes from the people and organizations that have a direct interest in understanding and managing the resources of the West Kitikmeot / Slave area. The Study has received strong support from all its Partners as well as from many organizations and individuals who are interested in helping the Study achieve its goals. The support received has come in as many forms as the variety of individuals prepared to help out. These include people from communities and aboriginal organizations, from within three governments, the mineral exploration and development sector, environmental organizations, research organizations and institutes and the general public. Such people are from all walks of life: researchers, hunters, administrators, politicians, business people, advocates and many others. The Society would like to thank all of you for your interest and support, and encourage you to continue to assist, inquire about, support and use this work.

We would like to express our thanks to the kind hospitality of the community of Rae for hosting meetings this year and making us welcome. Many other communities have also generously hosted us over the years: Cambridge Bay, Ekati Diamond Mine, Kugluktuk, Lutselk'e, Wha Ti and Yellowknife.

Peer Review

The Study would especially like to acknowledge the many independent experts who, anonymously and on their own time, reviewed proposals to the Society and/or each project's annual report and/or our State of Knowledge report to ensure that the information we released publicly was accurate and unbiased: (in alphabetical order): Marie Adams, Keith Ainsley, Tom Andrews, Chuck Arnold, Fikret Berkes, Peter Boothroyd, Margo Burgess, Suzanne Carriere, Ray Case, Stewart Cohen, Andy Didiuk, Helmut Epp, Marlene Evans, Brian Falck, Janet Ficht, Max Friesen, Cormack Gates, Brad Griffith, Anne Gunn, Doug Halliwell, Tony Hamilton, Chris Hanks, Steve Harbicht, Doug Heard, Greg Henry, James Hooper, David Huggard, Marc d'Iorio, Michael Jay, Dan Kerr, Peter Kershaw, Gary Kofinas, Ingrid Kritsch, Paul Latour, Peter Lee, Allice Legat, Rick Lowell, Dave MacDonald, Micheline Manseau, Evelyn Marlowe, Pat McCormack, Bruce McLellan, Paule McNicoll, Dave Milburn, Frank Miller, Erica Myles, John Nagy, John O'Neil, Brenda Parlee, Brent Patterson, Wayne Puznicki, Roger Reid, Rick Riewe, Roger Ruess, Juanetta Sanderson, Dale Seip, Glen Stephens, Michael Stone, Frank Tester, Don Thomas, Al Veitch, Lori Wilkinson, Anne Wilson and Rob Wright.

Funding

None of the research can take place without funding, and so we would particularly like to acknowledge those organizations who made generous contributions during 2000-01, and over the life of the Study:

Funders 2000 – 2001 year

Major Contributors (over $100,000)

- BHP Diamonds
- Diavik Diamond Mines
- Government of Canada
- Government of the Northwest Territories
- Government of Nunavut

Significant Contributors ($10,000 to $100,000)

- Dogrib Treaty 11 Council
- Inuit Organizations (WKSS Partners)
- Kitikmeot Geosciences Ltd.
- Kitikmeot Inuit Association
- Lutsel K'e Dene Council
- Metis Nation of the NWT
- Nunavut Tunngavik Inc.

Supporting Contributors (under $10,000)

- Braden Burry
- Canadian Parks & Wilderness Society (NWT)
- Kennecott Exploration
- Nishi Khon / SNC Lavalin
- North Slave Metis Alliance
- Nuna Logistics
- University of Alaska

Funders 1996 – 2001 (Study Duration)

Primary Contributors (over $1,000,000)

- Ekati Diamond Mine
- Diavik Diamond Mines
- Government of Canada
- Government of the Northwest Territories

Major Contributors (over $100,000)

- Canamera Geological
- Government of Nunavut
- De Beers Exploration (formerly Monopros)
- Nunavut Tunngavik Inc

Significant Contributors ($10,000 to $100,000)

- BHP Minerals Inc
- Canadian Arctic Resources Committee
- Dogrib Treaty 11 Council
- Echo Bay Mines
- Inuit Organizations (WKSS Partners)
- Kennecott Exploration
- Kitikmeot Geosciences Ltd
- Kitikmeot Inuit Association
- Lutsel K'e Dene Council
- Metis Nation of the NWT
- Nunavut Impact Review Board
- Nunavut Wildlife Management Board
- Placer Dome North America
- Tahera Corp
- University of Alaska

Supporting Contributors (under $10,000)

- Air Tindi
- Arctic Sun West
- Boart Longyear
- Braden Burry
- Canadian North Airlines
- Canadian Parks & Wilderness Society (NWT)
- Covello Bryan & Associates
- Great Slave Helicopters
- Hamlet of Ikaluktutiak
- Kugluktuk Angoniatit Association
- Ledcor Industrial Ltd.
- Nishi Khon / PCL
- Nishi Khon / SNC Lavalin
- North Slave Metis Alliance
- Nuna Logistics
- Nunavut Arctic College
- Penner & Associates
- ResCan Consultants
- Robinson's Transport
- Simons Mining Group/ Aboriginal Engineering Ltd.
- SouthernEra
- Style Calligraphy
- University of Saskatchewan
- Winspear Resources
- World Wildlife Fund Canada

Traditional Knowledge Steering Committee

This committee reviewed proposals for traditional knowledge projects in terms of how the projects met the Study's research priorities and the quality of the research proposed. The committee also reviewed all other proposals for any aspects related to traditional knowledge. The committee was made up of representatives of the aboriginal partners on the WKSS Board. Their recommendations were presented to the WKSS Management Board.

Many individuals participated on the Traditional Knowledge Steering Committee between 1996 and 2001. Those people include (in alphabetical order):

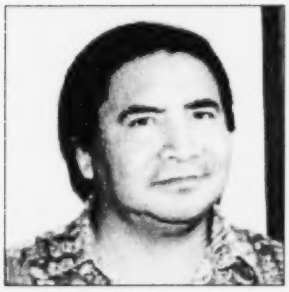
Stanley Anablak (Inuit Organizations), Gerry Atatahak (Inuit Organizations), Ted Blondin (Dogrib Treaty 11 Council), Violet Camsell-Blondin (Dogrib Treaty 11 Council), Florence Catholique (Lutsel K'e Dene First Nation), Lawrence Catholique (Lutsel K'e Dene First Nation), Sholto Douglas (Metis Nation of NWT), Jim Edmondson (Dogrib Treaty 11 Council), Edna Elias (Inuit Organizations), Dennis Kachkowski (Yellowknife Metis Council), Philip Kadlun (Inuit Organizations), Isaac Klengenberg (Inuit Organizations), Angie Lantz (Lutsel K'e Dene First Nation), Allice Legat (Dogrib Treaty 11 Council), Evelyn Marlowe (Lutsel K'e Dene First Nation), Pierre Marlowe (Lutsel K'e Dene First Nation), Antoine Michel (Lutsel K'e Dene First Nation), Clem Paul (North Slave Metis Alliance), Mike Paulette (Metis Nation of NWT), J.B. Rabesca (Lutsel K'e Dene First Nation), Wynet Smith (Inuit Organizations), Kane Tologanak (Nunavut Co-managment Agencies), Ron Tologanak (Inuit Organizations), Bob Turner (Yellowknife Metis Council & North Slave Metis Alliance), Henry Zoe (Dogrib Treaty 11 Council).

Project Steering Committee

This committee reviewed scientific knowledge projects in terms of how the projects met the Study's research priorities and the quality of the research proposed. Their recommendations were presented to the WKSS Management Board.

Many individuals participated on the Project Steering Committee between 1996 and 2001. Those people include (in alphabetical order):

Marie Adams (DIAND), Larry Aknavigak (Nunavut Co-Managment Agencies), Stanley Anablak (Inuit Organizations), Arthur Boutilier (DIAND), Adrian Boyd (DIAND), Violet Camsell-Blondin (Dogrib Treaty 11 Council), Bill Carpenter (Metis Nation of NWT/ Environmental Organizations), Ray Case (GNWT), Florence Catholique (Lutsel K'e Dene First Nation), Lawrence Catholique (Lutsel K'e Dene First Nation), Jim Cunningham (Inuit Organizations), Marc d'Entremont (DIAND), Sholto Douglas (Metis Nation of NWT), Jim Edmondson (Dogrib Treaty 11 Council), Ron Graf (GNWT), Dennis Kachkowski (Yellowknife Metis Council), Philip Kadlun (Inuit Organizations), Isaac Klengenberg (Inuit Organizations), Brenda Kuzyk (DIAND), Angie Lantz (Lutsel K'e Dene First Nation), Alfred Lockhart (Lutsel K'e Dene First Nation), David Macdonald (GNWT), Allen Maghagak (Inuit Organizations), Antoine Michel (Lutsel K'e Dene First Nation), Lorne Napier (Metis Nation of NWT), Bas Oosenbrug (GNWT), Kevin O'Reilly (Northern Environmental Coalition), Mike Paulette (Metis Nation of NWT), J.B. Rabesca (Lutsel K'e Dene First Nation), Wynet Smith (Inuit Organizations), Murray Swyripa (DIAND), Kane Tologanak (Nunavut Co-managment Agencies), Ron Tologanak (Inuit Organizations), Mike Vaydik (Chamber of Mines), Richard Weishaupt (Nunavut and NWT Chamber of Mines), Henry Zoe (Dogrib Treaty 11 Council).



TED BLONDIN

Chair's Message

This final report signals a momentous occasion for our Study, and one which all those who have contributed in so many ways can take great pride in. We can look back at a legacy of success in virtually all areas of our work. We have produced a range of high quality research on topics related to the regional effects of development. We have brought traditional knowledge and science to bear on these critical research problems which all the Partners have agreed are of greatest concern. As a Board we have worked together to give strong, clear direction to this Study, and set a standard for cooperation which would be difficult to surpass. We have taken steps to accomplish each of our objectives, and done so in a way that brought support from our communities and interest from around the world, and which persuaded skeptics that this kind of Partnership could work – and work well.

The Partnership was strengthened in this final year when the Government of Nunavut (GN) accepted the Board's invitation to join and participate in the Study. GN is the only new organization to join the Partnership over its five years and we welcome it whole-heartedly.

It is valuable and satisfying to look back over the last five years, and more, and think about the long way we have come and the many good things we have done together, as partners. But we must also keep clearly in mind our vision of supporting the achievement of sustainable development through better information for decision-making. Collection of baseline information is only the first step in developing a monitoring program for cumulative effects of development. There is a great deal more work to do before we have the baseline information necessary for informed decision-making in this region. More research is needed to complete the picture, and much planning and development is needed before a cumulative effects monitoring system is in place, information needs are defined and information gathering systems are in place.

The political situation in the Study area has changed since our work began in 1996. The Study area is now shared between two territories, the NWT and Nunavut. Monitoring agencies are in place for each of the two approved diamond mines and discussion is taking place about some form of regional rationalization and coordination of monitoring to avoid duplication amongst agencies, and to increase efficiency. The Government of Canada has made a commitment to a regional monitoring framework in the Slave Geological Province (SGP). A major initiative to develop a cumulative effects assessment and management framework is also

underway, with a specific focus on an Action Plan for the SGP. Another initiative is underway to develop a Cumulative Impact Monitoring Program to fulfill the obligations under Part 6 of the Mackenzie Valley Resource Management Act (MVRMA). A Mackenzie Valley Environmental Impact Review Board has been established, with a mandate to consider cumulative effects of projects which it assesses. Nunavut's General Monitoring Program is in the implementation stage. Any new research must fit within, and contribute to meeting the information needs of these emerging structures as well as the Partners.

Now that we know the partnership model can succeed we believe that it may be an ideal way to ask the important questions and provide the information needed by all those with an interest in cumulative effects assessment and management. Partnerships grow and change, and the current Partners would hope to involve a broad range of organizations in assembling recommendations for a successor organization, building on our strengths while responding to new membership needs and initiatives such as those outlined above.

I wish to express my gratitude to the many Board members I have worked with closely since the beginning of the Study, both past and present. Your determination and support have been critical to the success of our Study. This Board is made up of committed individuals with a wide range of approaches, expertise and contributions, all of which came together to make it greater than the sum of its parts.

I was pleased to be able to welcome Stephen Atkinson from the Government of Nunavut to the Board this year. We also welcomed Joe Ohokanoak from the Nunavut Water Board to fill the Nunavut Co-Management Organizations seat left vacant by the departure of long-time Chair Larry Aknavigak. On behalf of the Board, I want to thank Larry for his excellent work and dedication from the beginning of the Study.

I would like to thank our staff and our researchers for their hard work and dedication to excellence over the years. I would also like to thank all those organizations and individuals who contributed to the Study in many different ways. You are also our partners.

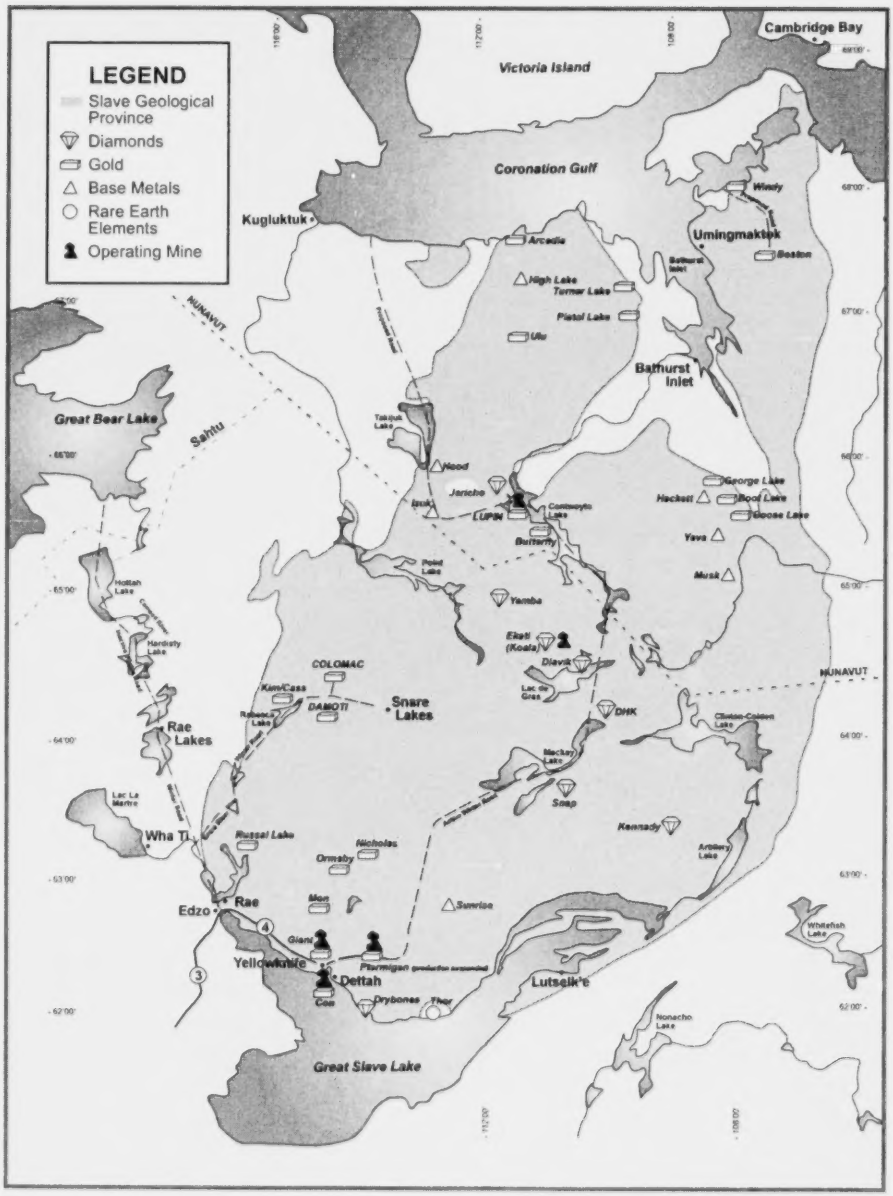
Congratulations to you all on doing an excellent job.

Ted Blondin

Chair

West Kitikmeot/Slave Study Area

Slave Geological Province & Surroundings
Northwest Territories / Nunavut Territory
Canada



Introduction

The West Kitikmeot / Slave Study Society was formally registered on January 18, 1996.

The Society's goal was to collect and provide information on the effects of development in the West Kitikmeot / Slave area to its Partners for their use in making informed decisions.

While the initial study area was defined as the Slave Geological Province, the Partners soon realized that the region should include the neighbouring zones and communities directly affected by development in the Province. The study area is now more loosely defined as the West Kitikmeot / Slave Study area. The map on page xv shows the Slave Geological Province boundary, and the surrounding area as part of the Study area.

Each of nine founding Partner organizations, representing a broad range of interests in the Study area, held a seat on the Society's Management Board:

- Dogrib Treaty 11 Council
- Lutsel K'e Dene First Nation
- Metis Nation of the Northwest Territories
- Inuit Organizations

  representing
  - Kitikmeot Hunters' and Trappers' Association
  - Kitikmeot Inuit Association
  - Nunavut Tunngavik Incorporated
- Nunavut Co-management Organizations

  representing
  - Nunavut Impact Review Board
  - Nunavut Planning Commission
  - Nunavut Water Board
  - Nunavut Wildlife Management Board
- Federal Government
- Government of the Northwest Territories
- Northwest Territories Chamber of Mines
- Environmental Organizations

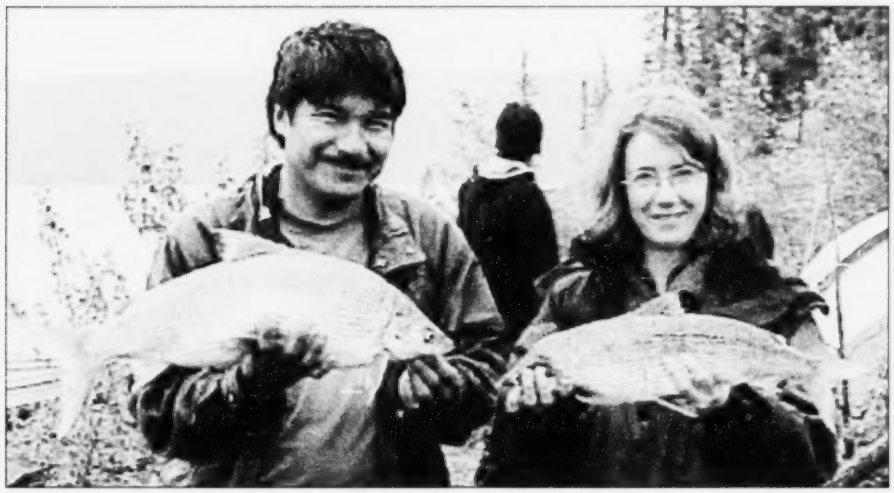
The Government of Nunavut (GN) came into being after the membership of the Society was established. GN accepted a seat on the Society's Management Board in July 2000.

Before establishing the Society, the Partners developed Terms of Reference for the five-year Study, including a vision statement, a goal, objectives and a management structure. The Terms of Reference set up a three-way funding partnership consisting of the Government of Canada, the Territorial government and the Industry/Aboriginal/ Environmental organizations. The Governments matched funding contributed by the other organizations to a maximum of $750 thousand per year each, or $2.25 million

per year total. Researchers made study proposals to the Society and the Management Board decided whether or not to approve these applications and how much funding to provide. In making its decisions the Management Board took into account reviews of the proposal by independent experts and recommendations of advisory Committees set up by the Board.

The Partners developed a comprehensive Research Strategy to guide them in choosing among proposals. The Strategy set out the Study Research Questions covering Physical and Environmental Research and Socio-Economic Research (the full list of research questions is included under Appendix B).

The Partners agreed that both scientific and traditional knowledge are important sources of information and that studies conducted under the auspices of the Society should link these two types of knowledge.



Brenda Parlee

Charlie Catholique and Anne Kendrick compare jumbo whitefish and whitefish during the Kaché Tué study. The study found that at least 12 species of fish are commonly harvested in the Kaché Tué area. Fish, particularly trout and whitefish, are valued for their relative abundance, especially in late spring and summer when caribou are scarce.

The Partners also agreed that communication was an essential part of the Study process. The Study Office was directed to make information collected as part of the Study available to the public. The Study Office developed a Communications Strategy and established communications with a wide variety of individuals and organizations who were interested in the Study and its results. In particular, the communications efforts targeted local communities and presented information in a way that was useful and interesting to them. Information will continue to be available after the Study formally ends, through arrangements with other agencies (see Appendix D for details).

Background

The West Kitikmeot / Slave Study area is vast, encompassing roughly 300,000 square kilometres of land, rivers and lakes in the Slave Geological Province (SGP) as well as a number of communities that depend on the resources of the area to live and prosper. The area has been occupied and used by Aboriginal peoples for thousands of years, making their living from the land. In more recent times the fur trade, religious institutions, government and the mineral industry have shaped development in the area through the establishment of trading posts, churches and schools, communities, roads, and operating mines.

The West Kitikmeot / Slave Study area includes large parts of two of Canada's major ecozones: the Taiga Shield and the Southern Arctic. The tree line, running northwest to southeast between them, divides the area roughly in half. The Bathurst Caribou herd, numbering 350,000, roams freely – calving, migrating and wintering largely within the area. Grizzly Bear, Muskoxen, wolves, Moose and a variety of furbearers make their homes here. Huge populations of migratory waterfowl, shorebirds and songbirds spend the summer months throughout Canada's north, and many of them are found here part or all of that time. Many of the lakes and rivers harbour substantial fisheries. The pristine environment and abundance of wildlife have attracted tourists and sportsmen, and a tourism/outfitting industry to meet their needs.

By world standards the West Kitikmeot / Slave Study area is largely undeveloped. However the development potential is high, particularly for minerals. There are several operating gold and diamond mines with more development proposals in regulatory review. Numerous mineral deposits with development potential are dotted throughout the area, mainly gold, diamonds and base metals. There are two hydroelectric developments and a number of potential sites.

One of the largest staking rushes in the history of the world began in the West Kitikmeot / Slave area during the early 1990's with the discovery of diamonds at Lac de Gras. Within a few years virtually the entire area was subject to mineral claims. Following on the high levels of exploration activity, the BHP Diamonds Project at Lac de Gras is well into its third year of production and the Diavik Diamond Mine is now under construction. Tahera's Jericho project is in the environmental assessment phase and De Beers' has submitted initial project documents for the environmental assessment of its Snap Lake project. A number of other companies have sites at the advanced exploration stage and a very large port and road infrastructure proposal centred on Bathurst Inlet is in the early feasibility study stage.

Mike Vaydik

Process plant and truck shop at Ekati Diamond Mine site in June 2000.

The West Kitikmeot / Slave Study was conceived during the early stages of the diamond staking rush as the extent of exploration and possible development became clear. Many organizations and individuals, especially aboriginal and environmental groups, voiced concerns about the pace of exploration and possible effects of development. All parties, including industry and governments, recognized the need for an improved information base in order to predict future changes, particularly information about the effects of multiple developments on the environment and the people in the area. All agreed that both traditional knowledge and scientific knowledge would be required to adequately meet these information needs. The West Kitikmeot / Slave Study was formally announced in a joint statement by the Minister of Indian Affairs and Northern Development, Government of Canada and the Minister of (then) Renewable Resources, Government of the Northwest Territories on December 9th, 1994. The Study was to last five years, with funding provided by the federal and territorial governments to match the combined contributions of the industry/aboriginal/environmental Partners.

A number of meetings and workshops were held involving representatives from the various Partner organizations. A West Kitikmeot / Slave Study Working Group was established, leading up to a meeting in Cambridge Bay in September 1995 where all the Partner organizations agreed on a basic management structure and set out the basis for the Terms of Reference for the overall Study. The Cambridge Bay meeting mandated a Transition Working Group to continue the process of implementing the Study, culminating in the signing of a Partners' Accord on December 14th, 1995 and confirming the commitment of all Partners to the Vision, Goal and Objectives of the Study (the Study Terms of Reference, including Vision Statement, Goals and Objectives are in Appendix A). At that time the Partners agreed to form a Society for the purposes of carrying out the West Kitikmeot / Slave Study, and an application to register the West Kitikmeot / Slave Study Society was filed the same day. The Management Board met for the first time immediately following the signing of the Partners' Accord to establish a Secretariat and begin putting the Study into operation.

The Management Board directed that a Research Strategy Workshop be held to guide the setting of research priorities and the development of a proposal review process. The workshop, held at the end of February 1996, was attended by representatives of all the Partners. The workshop results provided the initial basis for all research conducted under the West Kitikmeot / Slave Study.

At the March 26, 1996 Management Board meeting it was decided that a Traditional Knowledge Steering Committee and a Project Steering Committee be formed to review and recommend a final research strategy and to review project proposals for relevance to the research priorities, and for research quality. Since that time the research priorities have been refined and a specific set of research questions have been developed.

Dean Cluff

A wolf pup begins his life near Aylmer Lake.

The West Kitikmeot / Slave Study formally began on April 1, 1996 and its research was completed March 31, 2001.

A proposal for a successor organization is in development.

RICHARD WEISHAUPT

Treasurer's Message

The Society's fundraising partnership of industry, aboriginal and environmental organizations raised just over $634,000 for research in 2000-01. The Government of Canada matched contributions up to $626,000. The Government of Nunavut made a lump sum contribution of $187,500, while the NWT Government matched the first $375,000 of contributions. The total was sufficient to cover all the approved research, and largely due to under expenditures by some research projects, the Society was left with a surplus which will be applied to the wrap-up period in 2001-02. Thanks are due to the fundraising efforts of the Partners, and to the many contributors.

Partners should note that substantial amounts of funding were contributed directly to individual research projects rather than through the Society. These funds are not included in the audited financial statements in Appendix C, but are summarized below on pages 6-9.

We have all looked forward to the official proclamation of Nunavut for many years and are very pleased that the Government of Nunavut decided to participate in the West Kitikmeot/ Slave Study Partnership.

In reviewing the financial status of the Society since April 1996, I am pleased to note that our Partners' contributions always kept pace with the needs of our researchers, and that the Study was able to maintain a small surplus each year through efficient administration, tight cost control and conservative financial management.

Richard Weishaupt

Secretary-Treasurer

Financial Information 2000-2001

The budget for the period from April 1, 2000 until March 31, 2001 was $1.69 million with the Society actually generating a little over $1.8 million. Uses of these funds in the fiscal year totaled $383 thousand less than revenue. The surplus research dollars from the non-government organizations have been deferred to the 2001-02 wrap-up budget.

Audited statements of revenue and expenditures which were under the control of the Society are provided in Appendix B. Revenue and expenditures reported here are considered unaudited because they include contributions made directly to WKSS research projects and associated expenditures, which are not under the control of the Society and therefore not audited.

Sources and Uses of Funds (unaudited) for the year ended March 31, 2001

Sources of Funds

Government of Canada		$ 626,403
Indian Affairs and Northern Development	$ 626,403	
Government of the Northwest Territories		$ 375,000
Resources, Wildlife and Economic Development	$ 349,000	
Public Works	$ 26,000	
Government of Nunavut		$ 187,500
Industry/Aboriginal Environmental Partnership		$ 634,603
BHP Diamonds	$ 228,700	
Diavik Diamond Mines	$ 200,000	
Nunavut Tunngavik Inc	$ 50,000	
Dogrib Treaty 11 Council	$ 30,000	
Inuit Organizations	$ 30,000	
Lutsel K'e Dene Council	$ 30,000	
Metis Nation of the NWT	$ 20,000	
Kitikmeot Geosciences Ltd.	$ 12,000	
Kitikmeot Inuit Association	$ 10,000	
North Slave Metis Alliance	$ 10,000	
Kennecott Exploration	$ 4,500	
University of Alaska	$ 4,403	
Nuna Logistics	$ 2,500	
Braden Burry	$ 1,000	
Nishi Khon / SNC Lavalin	$ 1,000	
Canadian Parks & Wilderness Society	$ 500	
Miscellaneous		$ 278
Investments		$ 24,521
TOTAL		**$ 1,848,305**

Uses of Funds

Study Office	$ 336,350
Management Board Support	$ 33,838
Research/Projects	$ 1,070,532
TOTAL	**$ 1,440,720**
Excess Revenue (unadjusted)	$ 407,585

Statement of Expenditures (unaudited) for the year ended March 31, 2001

Study Office		$ 336,350
Management Board		$ 33,838
Research/Projects		$ 1,070,532
Caribou Seasonal Movements	$ 85,000	
Calving Grounds	$ 68,122	
Parasites	$ 620	
Eskers: Physical/Habitat	$ 10,000	
Community-Based Monitoring (Phase 2)	$ 91,810	
Dogrib Traditional Knowledge of Habitat	$ 258,750	
Habitat Classification	$ 84,000	
Tuktu and Nogak	$ 85,330	
Kaché Tué	$ 202,345	
GST (less credit)	$ 22,312	
Project Development	$ 120,000	
Information Inventory	$ 41,909	
Sub-Total	**$ 1,070,532**	
TOTAL		**$ 1,440,720**

Financial Information 1996-2001

The following provides cumulative information on revenue and expenditures during the Study's five-year lifespan

Sources and Uses of Funds (unaudited) for the period April 1, 1996 to March 31, 2001

Sources of Funds

Government of Canada		$ 3,340,327
Indian Affairs and Northern Development	$ 3,277,727	
Polar Continental Shelf Project	$ 47,700	
Natural Sciences & Engineering Research Council	$ 12,500	
Northern Scientific Training Program	$ 2,400	
Government of the Northwest Territories		$ 2,739,581
Resources, Wildlife and Economic Development	$ 2,596,872	
Public Works	$ 130,000	
Education, Culture and Employment	$ 12,709	
Government of Nunavut		$ 187,500
Industry/Aboriginal/Environmental Partnership		$ 3,295,971
BHP Diamonds	$ 1,170,141	
Diavik Diamond Mines	$ 1,049,527	
Nunavut Tunngavik Inc	$ 202,000	
De Beers Exploration (formerly Monopros)	$ 153,361	
Canamera Geological	$ 111,329	
Nunavut Wildlife Management Board	$ 94,000	
Tahera Corp. (formerly Lytton Minerals)	$ 72,050	
BHP Minerals	$ 48,250	
Echo Bay Mines	$ 39,480	

Kennecott Exploration	$	35,500
Kitikmeot Inuit Association	$	30,216
Dogrib Treaty 11 Council	$	30,000
Inuit Organizations	$	30,000
Lutsel K'e Dene Council	$	30,000
Nunavut Impact Review Board	$	22,000
Kitikmeot Geosciences Ltd.	$	22,000
Metis Nation of the NWT	$	20,000
Placer Dome North America	$	15,500
World Wildlife Fund	$	15,500
University of Alaska	$	12,590
Canadian Arctic Resources Committee	$	12,368
North Slave Metis Alliance	$	10,000
Boart Longyear	$	8,000
Winspear	$	6,000
Canadian North	$	5,510
Ledcor	$	5,000
ResCan Consulting	$	5,000
University of Saskatchewan	$	5,000
Covello Bryan	$	4,725
Braden Burry	$	4,500
Hamlet of Ikaluktuutiak (Cambridge Bay)	$	4,000
Great Slave Helicopers	$	3,500
Air Tindi	$	3,000
Nuna Logistics	$	2,500
Golder Associates	$	2,000
Robinson's Transport	$	2,000
Simons / Aboriginal Engineering	$	1,500
Canadian Parks & Wilderness Society	$	1,500
Nunavut Arctic College	$	1,350
Arctic Sun West	$	1,000
Nishi Khon / PCL	$	1,000
Nishi Khon / SNC Lavalin	$	1,000
SouthernEra Resources	$	1,000
Penner & Associates	$	500
Kugluktuk Angoniatit Association	$	450
Style Calligraphy	$	124
Miscellaneous		$ 79,195
Investments		$ 66,247
TOTAL		**$ 9,708,821**

Uses of Funds

Study Office	$ 1,360,684
Management Board Support	$ 219,962
Research/Projects	$ 7,488,517
TOTAL	**$ 9,069,163**
Excess Revenue (unadjusted)	$ 639,658

Statement of Expenditures (unaudited) for the period April 1, 1996 to March 31, 2001

Study Office		$ 1,360,684
Management Board		$ 219,962
Research/Projects		$ 7,488,517
Grizzly Ecology	$ 1,138,489	
Dogrib Traditional Knowledge of Habitat	$ 940,536	
Dogrib Traditional Knowledge of Caribou	$ 743,743	
Bathurst Caribou Calving Grounds	$ 660,151	
Caribou Seasonal Movements	$ 552,900	
Eskers: Physical/Habitat	$ 498,389	
Habitat Classification	$ 404,975	
Kaché Tué	$ 395,536	
Tuktu and Nogak	$ 365,616	
Community-Based Monitoring (Phase 2)	$ 300,478	
Wolverine	$ 281,650	
Caribou Behaviour at Mine Sites	$ 72,530	
Traditional Knowledge of Community Health	$ 55,606	
Air Quality	$ 53,000	
Community Based Monitoring (Phase 1)	$ 43,027	
Lake Sediment / Water Quality	$ 29,900	
On-Ice Drilling / Water Quality	$ 28,272	
Parasites on Caribou Calving Grounds	$ 5,000	
Project Development	$ 616,000	
Lutselk'e Overview	$ 31,130	
Yellowknife Metis Council	$ 14,490	
Rae-Edzo Metis Local	$ 10,407	
GST (less credit)	$ 71,983	
Information Inventory	$ 101,096	
Research Framework	$ 33,922	
Extension of Research	$ 8,948	
Habitat Classification Evaluation	$ 6,410	
Traditional Knowledge Research Assessment	$ 5,907	
Data Management	$ 5,592	
Sub-Total	$ 7,488,517	
TOTAL		$ 9,069,163

The Study

Study Structure

The West Kitikmeot / Slave Study is a made-in-the-north success story. WKSS is unique; the first study of its type to recognize from its beginning how essential traditional knowledge is to a holistic understanding of the environment. Study research projects marry information from traditional knowledge holders and western science to provide a baseline for assessing and managing the cumulative effects of regional development. The WKSS Management Board is also unique – a partnership of Inuit, Dene and Metis people living in the area, environmental organizations, the mining industry and the federal and territorial governments.

The Management Board has ten members and an independent chair. Representatives of the aboriginal Partners form half of the Board (five members) and choose the chair. Decisions are made by consensus wherever possible, and virtually all decisions have been unanimous.

Alice Legat

Romie Wetrade and Phillip Nitsiza naming places on maps and explaining their significance.

The Board has established two committees that play a critical role in setting and monitoring the Study's research agenda:

Traditional Knowledge Steering Committee

The Traditional Knowledge Steering Committee is made up of representatives of the aboriginal Partners on the Board. It provides guidance on traditional knowledge to the Board. It reviews traditional knowledge research proposals for quality of research and contribution to meeting the Study's research priorities. The Committee also reviews all other proposals for aspects related to traditional knowledge.

Project Steering Committee

The Project Steering Committee is made up of representatives from all the Partners and reviews Scientific Knowledge projects both in terms of how they meet the Study's research priorities and the quality of the research.

Both of the Committees make recommendations regarding proposals, which the Board considers along with reviews from independent experts, before deciding whether to approve a project proposal.

Study Office

The Management Board also set up a streamlined Study Office with three staff to operate the Study on a day-to-day basis. The Study Director reported directly to the Board, and worked closely with the Chair between Board meetings. The Office's responsibilities included: project administration, communication of results to the Partners and the public, administration of the Study and supporting the Board and Committees in their deliberations. The Partners agreed that the Study Office should stay small and focused to ensure the maximum possible amount of resources be used for doing research.

Highlights of Study Activities

This section summarizes the research priorities, assessment of proposals, internal meetings, funding formulae and public communications. Particular changes in the context of the Study are noted in "The Study in the 'Big Picture'". Highlights of the research are found in Overview of Results, starting on page 18.

The Study's five-year mandate concluded on March 31, 2001. The final year was largely spent bringing the remaining research projects to the final report stage and working out a proposal for next steps in 2001-02. The proposed work for next year includes wrapping up the Study – including production of the Final Report in print and electronic (CD-ROM) form, updating the *State of Knowledge Report* and ensuring the reports continue to be available through the Internet and hard copy when the Study Office closes down. The proposal includes a planning process to recommend a successor organization to WKSS, and a research program for cumulative effects monitoring in the WKSS area. The proposal also provides for the continuation of some key baseline research projects which it was felt would be impaired by stopping data collection for a year.

A main focus throughout the Study has been on producing high-quality research results and making these results accessible to Partners, communities, contributors and the public. Over the period of the Study 76 proposals for projects or revisions to projects were received, including one new research proposal and three requests for revision which were received this year. Of the 21 projects and 17 revisions/extensions approved over the life of the Study, nine projects continued from previous years and one was approved for extension, but later withdrawn. Ten of the projects were completed in the final year. Board and staff have been directly involved in fundraising over the years, and our supporters from industry, aboriginal organizations and environmental organizations contributed the funding required to cover all approved research in the final year, as they have in all previous years.

The Study became a transboundary body on April 1, 1999 with the creation of Nunavut. The Government of Nunavut accepted the Board's invitation to join it in 2000-01 with the Department of Sustainable Development taking the lead role.

Meetings

The Traditional Knowledge Steering Committee (TKSC) met twice in the final year and the Project Steering Committee (PSC) once, to provide advice to the Board concerning the progress of current research and to make recommendations regarding new research proposals. Each committee held an additional conference call to recommend projects which would be impaired if a year of research was missed. Over the life of the Study the TKSC met 15 times and the PSC met 14 times.

The Board met five times in 2000-01: in May to discuss the outcome of the workshop on the Future of the WKSS, a regular meeting at Rae in July with a follow-up conference call in July, a meeting in Yellowknife in December to review a draft proposal for wrap-up, planning and research in 2001-02, a conference call in January to finalize the proposal and another conference call in March to assess the fundraising for 2001-02. This brings the total number of Management Board meetings over the life of the Study to 18.

The Executive Committee met once in April and held conference calls in December, February and March to deal with administrative issues and specific decisions delegated by the Board for a total of 21 meetings since the start of the Study.

An ad hoc committee on the post-March 31, 2001 transition met in November to review the draft proposal for 2001-02 prior to submission to the Board.

Annual General Meeting and Annual Report

The fifth Annual General Meeting took place July 6, 2000 at Rae, NWT. The annual report and audit were accepted by the members and the Society's work plan for 2000-01 was reviewed and approved.

Research Framework

In 1994/95, prior to the official establishment of the Society, an inventory of existing information about the Slave Geological Province and surrounding area was done. This inventory of existing information was summarized in the first *State of Knowledge Report* published in 1999. The purpose of the inventory was to assist the Society's Management Board in establishing its *Research Strategy* by identifying gaps in research as well as avoiding duplication of existing studies. The Board approved the final strategy, including a broad set of research priorities, in May 1996. This document was intended to ensure the sum total of all the Study's research projects would provide a holistic picture of the Study area at the conclusion of the Study. It served as the basis for reviewing an initial suite of research proposals. At the same time the Board determined there was a need to further refine the *Research Strategy* and framework. A terms of reference was developed in July 1996 and a contract was let in September that year to comprehensively review techniques for defining research priorities in the context of the Study and existing research priorities. It was agreed that the Valued Ecosystem Component / Valued Socioeconomic Component approach would most closely meet the needs of the Study. The Partners were consulted regarding their priorities and a process was developed to refine and focus the existing research priorities into a research framework. Representatives of the Partners attended two workshops where they developed a set of research questions and attached priorities to them. These research questions were then ratified by the Board.

The Research Framework was finalized in February 1997, although the Board agreed that would be a "living document" – allowing it to be reviewed and revised from time to time.

Proposals

Over the period of the Study 74 proposals for projects or revisions to projects were received, including one new research proposal and three requests for revision which were received this year. All proposals were reviewed by the Study Office, then circulated to independent experts, the Board and the Traditional Knowledge Steering Committee for review and recommendations. Scientific research proposals were also sent to the Project Steering Committee only for recommendations. The Board had the final decision on approving proposals as written, asking for changes, or rejecting proposals.

Calls for research proposals were not made in 2000-01, although one new proposal was received along with three proposals to extend or revise existing research projects. The new proposal was reviewed in the standard manner, and was not approved. A proposal to extend an existing research project was received and approved, but later withdrawn.

Research Reports

Over the life of the Study, 21 projects and 17 revisions/extensions were approved by the Board. A summary of projects and results begins on page 18 of this report.

The standard evaluation procedure for research reports was review by the Study Office:

- reports meeting the basic submission requirements were sent to independent experts for evaluation;
- review and approval by independent experts;
- the reports were signed off by the Chair; then
- public release through the Study office and the Internet.

Five of the 1999-00 studies provided deliverables by the May 15 deadline with an annual or final report on the project, with a sixth reporting three days later. Two of the other four projects submitted results for 1999-00 by June. All reports included research results. One project did not submit a report for 1999-00.

All continuing projects for 2000-01 submitted final reports on their results. These reports will go through the standard evaluation procedure prior to public release. Fifty-five annual or final reports have been reviewed for public release since the beginning of the Study.

Funding

The WKSS funding formula was modified for the final year, though the end result continues to be three-to-one matching funding. The Government of the Northwest Territories continued matching funding up to half the combined territorial government commitment ($375,000), while the Government of Nunavut made a direct contribution of $187,500. The Government of Canada matched funding from the Industry/Aboriginal/Environmental Funding Partnership. $634 thousand raised from 16 contributors. Altogether the Study raised over $1.8 million dollars in its final year, enough to allow all projects to receive their approved funding.

Over its five years, the Study raised over $9.6 million dollars. Forty-six different organizations made contributions to our research. The Society has solicited funds from more than 60 companies and other organizations each year and has met with many contributors and potential contributors over the years to discuss the Study's progress and seek contributions. Each year, advertisements acknowledging contributors were placed in WKSS newsletters and directly in *News/North* and *Nunatsiaq News*. Contributor logos were displayed in the annual report and each contributor received a framed certificate of appreciation.

Of the funds contributed by the industry / aboriginal / environmental partnership in the final year, just over 70% was contributed by the mining industry. In particular BHP Diamonds contributed $225,000, Diavik Diamond Mines contributed $200,000. For a complete breakdown of contributions from all sectors see the Financial Information 2000-2001 section. Industry's contribution averaged 84.5% of the contributions from the industry / aboriginal / environmental partnership. Two companies deserve particular mention: BHP Diamonds Inc. and Diavik Diamond Mines Inc. each contributed over a million dollars to WKSS over the life of the Study. For a breakdown, see the Study Finances 1996-2001 section.

Communications

Communication has been a key component of the West Kitikmeot / Slave Study and will continue to be now that the Study has completed.

Over its history, WKSS has been committed to making information generated by the Study as widely available and as public as possible. The Society has taken a proactive approach, placing the information into public forums where it is easily accessible. All WKSS reports are public documents.

Making full research reports and all other study information easily available to the public, is a priority for WKSS.

The website for the West Kitikmeot / Slave Study [www.wkss.nt.ca] will continue to be maintained and available long after the Study offices have closed. All of the Study's key information will be on the site: the Final Report of the West Kitikmeot / Slave Study, final reports from each research project, and other comprehensive Study information. Information on all aspects of the Study is also available on the website, including: its history, terms of reference for the Society, annual reports, the State of Knowledge Report and newsletters.

In the last year of the Study, the WKSS web site was receiving close to 30,000 visits (about 250,000 hits, with a "visit" being made up of a number of "hits") per year from 23 different countries.

During the Study, the *WKSS Notes* newsletter grew to 12 pages: it was published in seven editions, the most recent in Spring 2001. Newsletters were inserted into *News/North*, the territorial newspaper, which is delivered across Nunavut and the Northwest Territories and into southern Canada. Several thousand more newsletters were distributed at public events and through a mailing list of over 400 recipients.

Annual Reports for the Society including research results, maps and graphics were circulated each year to Partners and an extensive range of study area communities, territorial, national and international libraries, study-area schools, interested organizations and individuals.

The Study and its research projects received extensive media coverage, primarily by *CBC Television and Radio*, *CKNB/APTN* radio and television, *Yellowknifer* and *News/North*, and *CJCD Radio* which serves Yellowknife and Hay River. Additional stories have appeared in *Up Here* magazine, *Ittuaqtuut*, *Nunatsiaq News*, the *Edmonton Journal*, *Mining North*, and *Americas* magazine.

The Society has taken many opportunities to reach out to the public through presentations and displays at various forums. In June of 1998, the Management Board of WKSS decided to hold all of its regular board meetings in the smaller communities of the study area in order to bring study information closer to the residents. Public meetings were held in Wha Ti, Lutselk'e, Kugluktuk, Cambridge Bay, Rae-Edzo and Yellowknife.

Each spring researchers presented their projects and findings at public meetings in Yellowknife. These meetings grew to two full evenings, received print, radio and television coverage, and drew audiences of well over 100 people to each year's presentations. Researchers have also presented their finding to international audiences. In particular, researchers from two of the traditional knowledge projects have presented their research in Norway (Tromso), Finland (Rovaniemi), Scotland (Aberdeen), Calgary and Vancouver.

In previous years WKSS participated with presentations and/or displays at the Geoscience Forum in Yellowknife, to the Dogrib Assembly, the North Slave Metis Alliance Assembly, The BHP Independent Environmental Monitoring Agency, the NWT Chapter of the International Association for Impact Assessment and to a workshop on a Mackenzie Valley Cumulative Impact Monitoring Program. The Study Director also participated in an Elders/Scientists workshop sponsored by the Dene Nation in 1998. Displays have been set up during Wildlife Week and Mining Week.

In 2000/01, the Study Director and Chair made a presentation on the Study to the Cumulative Effects Assessment and Management Framework Working Group (CEAMFWG) in February. In addition the Study Director made presentations at the Geoscience Forum, to the National Round Table on Environment and Economy, an introductory presentation to the CEAMFWG, and general presentations on the Study to the Mackenzie Valley Environmental Impact Review Board and delegates from LEAD International. He also made a presentation on traditional knowledge and scientific research to the Mackenzie River Basin Board Water Forum.

Annual meetings have been held with the NWT Minister of Resources, Wildlife and Economic Development since the start of the Study. Meetings have also been held with elected officials of the Government of Nunavut including the Premier; Minister of Sustainable Development; Minister of Culture, Language, Elders and Youth; and Minister of Transport. This year, the Chair and Study Director met with Hon. Joe Handley, RWED Minister, in July 2000, to brief him on progress of the Study and discuss future directions. The TKSC met with Minister Handley in March 2001 to discuss GNWT support for traditional knowledge research in 2001-02 and over the longer term.

Personnel

Two staff were working for the Society at the end of its research mandate: John McCullum – Study Director and Peter Cullen – Study Assistant. Peter Kakolak, Study Assistant trainee, left the organization in August. Over the years the Society had three other employees: Pearl Benyk, Study Assistant; James Marlowe, Study Assistant; and Sharon Pellissey, Study Assistant Trainee.

Contracts

The *State of Knowledge* report for the West Kitikmeot / Slave area was updated as part of the final report production process. It will be finalized and uploaded to our Internet Website during 2001-02. Data from scientific research projects will also be uploaded to the Website.

The Study in the "Big Picture"

Environmental Assessment / Cumulative Effects Monitoring

The Society's research is an important part of the groundwork being laid for environmental assessment and cumulative effects monitoring in the West Kitikmeot / Slave area. Most of the Society's work focused on gathering baseline information needed to monitor trends. There are significant development proposals and potential projects throughout the region which will each contribute to cumulative effects, and require accurate, reliable information for their assessment. These include the Slave Geological Province transportation corridor and advanced projects such as Jericho, Snap Lake and Kennady Lake as well as numerous other mineral deposits at various stages of exploration. While this baseline information is an important first step, people also realize that a mechanism and commitment to monitoring regional effects of projects is also needed.

In November 1999 the federal government approved the Diavik Diamond Mine comprehensive study report and made a commitment to a regional cumulative effects management framework and a monitoring mechanism which would be integrated into this framework.

The Department of Indian Affairs and Northern Development (DIAND) and Department of Environment (DOE) are leading a working group representing major stakeholders throughout the Mackenzie Valley region (i.e., all of the NWT except the Inuvialuit Settlement Region) to develop the framework. The framework will be completed by March 31, 2001. In any case, there is a commitment to develop an action plan on cumulative effects assessment and monitoring specific to the Slave

Geological Province. There is a general consensus among the Study Partners and other key players in the region that the kind of research the Study is doing should continue. The Partners have prepared a proposal for 2001-02 which addresses this need (see *A Look Ahead* later in the report).

Work also continues under DIAND's lead to develop a cumulative impacts monitoring program as specified in Part 6 of the MVRMA, and this will include the NWT portion of the WKSS area.

Cycles in the Mineral Industry

The mineral industry is an essential funding partner for WKSS; industry partners are dependent on worldwide prices of their products. Over the life of the Study, worldwide prices of gold and other metals dropped (though they rose somewhat over the last two years). This negatively affected some of the Society's contributors ability to raise funds and make contributions.

The movement of some mineral projects into the production, construction and advanced exploration phases helped to offset decreased contributions from other industry contributors. Our continued identification of new potential funders from a range of sectors that benefit from our research has helped to ensure that the Study's fundraising targets were met.

As mineral prices have increased so have the number of staked claims in the Slave Geological Province. Since the beginning of the Study the number of staked claims in good standing has risen by more than 50%, from about 2,850 on April 1, 1996 to 4,500 on March 31, 2001..The area staked, in hectares, has risen from about 2.25 million to 3.65 million in the same period.

Mike Vaydik

Two diamond drills near Snap Lake, showing the exploration phase of mining development (June 1999).

Overview of Results and State of Knowledge

This overview provides a perspective on how the WKSS studies and their results fit together and contribute to overall understanding of the Study Area. A key feature of WKSS research is the holistic approach of the Study: the emphasis on the value of both scientific and traditional knowledge, the research framework and priority questions which direct the selection of projects, the relationships between researchers, communities and the partnership of aboriginal organizations, industry, environmental organizations and the federal and territorial governments. This holistic view is put into practice by encouraging interaction between researchers, linkages between projects and through information-sharing and consultation between the many experts in their fields, both scientists and elders.

State of Knowledge

WKSS will release an updated version of its *State of Knowledge Report on the West Kitikmeot / Slave area* in fall 2001; this report will update the version currently found on the WKSS website. The SOK report provides an overview of the region based on all the written material available, including the results of WKSS studies. The report covers a broad range of information about the natural and socioeconomic environment of the region, referring to both western scientific and traditional knowledge. A summary of the findings and a comprehensive bibliography on the region will also be available. These documents provide a valuable resource of information and sources of information about the region.

The starting point for the SOK report was a bibliography covering as much as possible of the documented information about the region including books, articles, government and private sector reports, and unpublished documents. This material was reviewed to assist in identifying and examining gaps in the knowledge base about the region. In addition to identifying knowledge gaps, this analysis contributed to the process for developing the WKSS Research Questions by ensuring that existing data was not duplicated by WKSS studies.

The documents were sifted and condensed to describe what is known about the region, the stresses acting on it and the kinds of information still needed to understand and manage the effects of these stresses.

Much of the traditional knowledge about the region has not been documented and so has not been included in the SOK report. This lack of documentation of traditional knowledge was identified as a research priority by the founders of WKSS and the Study has supported a number of traditional knowledge research projects to help fill these gaps.

While the SOK report does not draw specific conclusions about how to manage the identified stresses, it does discuss the need for a stewardship approach striving for sustainable development in the region. One of the major stresses that is already causing significant effects on the WKSS area is climate change, also known as global warming. Effects are being felt on permafrost, vegetation, fires, animals, birds and fish. In the coming years these stresses are expected to increase. Another stress acting on the region is long range transport of air pollutants: the good news is that many of

these are already decreasing in the north, however levels of mercury are increasing and are likely to continue to do so. It appears that the most significant environmental stresses resulting from development in the north are largely restricted to project sites, such as pollution associated with mining, settlements or hydroelectric projects.

The major internal stresses in the region are socioeconomic, and it is not clear whether these are increased or decreased by development. In general, economic and social security for the one-third of the region's population that depend on social assistance is a source of significant stress. Significant social problems exist in all communities, many at higher rates than the national averages. Crime rates are three times the national average and levels of alcohol and drug abuse are well above national averages. Development may be an opportunity to improve some of these circumstances by providing greater opportunities for wage employment; however it also creates stress for the many who are concerned about the possible negative environmental effects on the land and their ability to harvest from it.

The final task in preparing the SOK report was to test the WKSS Research Questions by comparing them with the most significant environmental and socioeconomic components and stresses identified by the SOK. The SOK report did find that the WKSS Research Questions are significant priority areas for research. The SOK report also identified a number of other areas for further research; these are discussed in the section on *Assessment of Progress* (page 54). Comments and suggestions on the SOK report can be made through the WKSS website.

WKSS Studies

Each of the WKSS studies answers one or more of the WKSS Research Questions. In developing the WKSS Research Framework (see "Research Framework" p.12) the Study Partners looked carefully at the kinds of development pressures expected in the region, particularly activities which might potentially cause significant effects at the regional scale. They also considered the order in which research should occur; for example they decided that habitat studies would be needed early on to support studies on wildlife. Before establishing the WKSS Research Questions they also considered mandates, programs and expertise of agencies in the region, to ensure that WKSS studies did not infringe on specific areas of responsibility or duplicate existing work.

Traditional Knowledge

The work of WKSS has filled in several high-priority gaps in our state of knowledge about the Study area. One of the most pressing of these was, and continues to be, the documentation of traditional knowledge about the region.

WKSS traditional knowledge research on the land covers much of the WKSS area. Caribou were identified by all aboriginal communities in the WKSS region as high priorities for research; water and habitat were also high priorities - so the focus of the traditional knowledge projects was generally on these areas. Three of the studies discussed below will shed more light on our understanding of caribou behaviour from the perspective of the Dogrib, Chipewyan and Inuit.

Alice Anablak, Kugluktuk, 2000.

In each of the traditional knowledge studies, an elders committee guided the research. WKSS follows the principle that traditional knowledge studies, and the release of associated data, should be controlled by the community and guided by the elders. The projects all used interviews as the main source of data, recorded in audio format (and video in some cases) and included field trips to sites on the land which would stimulate participants' memories. Verification techniques involving all elders working on the project were also common to all projects. Elders were all very concerned to ensure that they presented accurate information about the things they had experienced directly or the stories they had been told.

There were strong parallels among the results of these studies. Respect for caribou emerged as something all elders felt was critical to the relationship between humans and caribou, and this was shown by knowing as much as possible about caribou and learning to understand (or "think like") a caribou. Respect was also shown by using as much of the caribou as possible and sharing the hunt. In all cases the elders' lives revolved around caribou for survival in the past, not only as a food source, but for clothing, tools, shelter and many other aspects of life. Hunting techniques also had parallels such as use of caribou fences, or hunting at water crossings. At the same time peoples' knowledge of caribou varied because of the different settings in which their knowledge was collected. Hunters all had knowledge of what caribou eat, through examination of stomach contents, with substantial agreement among different research projects, but some variation in certain seasons.

All the elders strongly emphasized the need for respect for the environment, the animals and the people in order to maintain healthy ecosystems and a sustainable lifestyle.

Using Traditional Knowledge and Science to Gain Greater Understanding

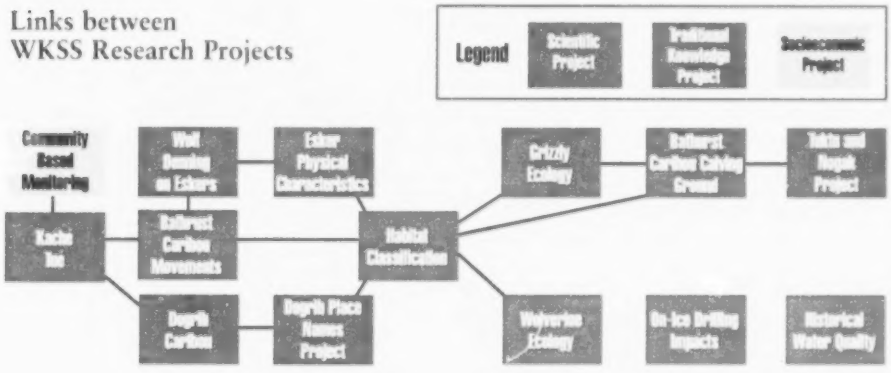
Where possible the Study focused both collection of traditional knowledge and scientific research on specific research questions to gain a broader, deeper and more holistic understanding. On the Bathurst caribou calving grounds, the Tuktu and Nogak project used information from Inuit elders to examine Bathurst caribou and their calving. In parallel, the Bathurst Caribou Calving Grounds study used scientific methods to research factors affecting where caribou calve, and the Bathurst Caribou Seasonal Movement study provided information on the core calving area from year to year. These studies produced complementary information on shifts in the core calving area over time, and the reasons for them. Both studies also found that climate change is becoming a factor in these shifts.

The Seasonal Movements study, the Dogrib Traditional Knowledge of Caribou study, the Tuktu and Nogak study and the Kaché Tué study all gave insight into Bathurst caribou movements and changes in migration behaviour throughout their range, including such areas as: changes in behaviour and movement from season to season, long term patterns of movement, and the relationship of habitat and vegetation to movement and feeding patterns.

The Dogrib Caribou study also shared information on caribou use of habitat with the Dogrib Place Names study through a state-of-the-art Geographic Information System (GIS). The Kaché Tué study and Tuktu and Nogak project also included place names and habitat-related terminology in their work, using similar GIS approaches to map them. At the same time, the Vegetation Classification project produced vegetation-habitat information using satellite technology and this information was also input to a GIS. These different habitat classifications assisted in defining important habitats and larger-scale habitat groupings such as ecozones.

A number of these projects benefited from the discussions of the WKSS Caribou Research Task Force, which brought together all scientific and traditional knowledge researchers working on caribou with other representatives of WKSS communities to make recommendations on research needs. Although this group only met once, the interaction of various forms of knowledge and academic disciplines was of major benefit to all members in identifying critical research areas. This kind of sharing of information has been an important element in many aspects of the Study.

Links between
WKSS Research Projects



The Sum of the Parts: Key Results and Linkages

Each of the studies contributes to our overall understanding of the Study area. The individual project results are summarized later in the report. In this section the potential links and synergy among results of the many projects are considered.

The foundation for developing the overall picture of the Study area is the land and water, the home of the many plants and animals which live in the Study Area. The study which used deep sediment cores from a lake bottom gave a historical picture of changes in the lake environment over the last several hundred years. It showed that water quality has generally been consistently good, with some increase in the acidity of the water beginning around 1850, and some possible shortening of the period of ice cover after 1830. This data provides a historical baseline to compare with any future changes in water quality. A study on the effects of exploratory drilling from lake ice has fed into the development of appropriate northern regulations for maintaining water quality. The results showed that wastes from drilling programs in kimberlite (diamond) targets have to be managed more carefully than other types of targets (gold, base metals, etc) to preserve aquatic habitat.

The Vegetation Classification project provided a broad view of current habitat in the region. Using remotely sensed data from satellites, it produced a large scale vegetation map which is a basis for habitat analysis within the WKSS region. This information is essential in understanding the availability and abundance of various habitat types, the habitat requirements/preferences of wildlife, and the availability and importance of the various habitat types. It also provides a reference for any large-scale changes in vegetation over time, such as those that might be caused by climate change. The classification is a critical part of environmental management decision-making in the WKSS area; for planning, assessment and monitoring. Work has been completed for eight Landsat image areas covering over 200,000 square kilometres from Arctic Ocean down through the Bathurst Caribou calving grounds east and west of Bathurst Inlet, down through the boreal forest almost to Great Slave Lake.

The satellite Vegetation Classification linked with wildlife ecology studies by providing a basis for assessing habitat use and the important habitats for different species. In particular the information was used for habitat analysis in the Grizzly Ecology study, the Esker Habitat for Wolves study and the Bathurst Caribou Calving Grounds study. The Physical Characteristics of Eskers study was linked to the Esker Habitat for Wolves study and also added information to the Vegetation Classification.

The Dogrib also researched habitat through traditional place-names. They have found two main categories of place names: those related to travel, and those related to hunting/gathering resources. The research shows that the Dogrib divide their territory into four main habitat zones. Many different habitat types were described within these zones and were documented in detail and entered into the Treaty 11 GIS system. This approach was paralleled by part of the Kaché Tué study, which produced a preliminary Elders Ecosystem Classification, and linked directly with the Vegetation Classification. A preliminary map has been produced overlaying Dogrib place-name information on satellite vegetation classification maps. Although these early maps showed promise, more work is needed to find appropriate ways to bring these two types of information together.

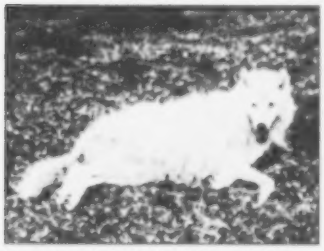
WKSS research showed that eskers were used extensively by aboriginal people in the past. The project examining physical characteristics of eskers has documented heritage sites on eskers, and analysis has suggested certain factors that may have affected the location of such sites, such as proximity to water.

Helmut Epp

The many esker systems that run through the region were also found to be key habitat for bears and wolves, although they only make up three percent of the total land area.

We now have a much better idea of the habitat preferences of Grizzly Bears from season to season. They particularly use eskers and shrubby treed areas near water. Male grizzlies use eskers frequently in spring, however relatively few (13%) bears used eskers for denning (about 60% of dens were found in heath tundra type areas). They also seem to prefer the less available habitats: birch seep, lichen veneer and tussock/hummock types.

Wolves seem to particularly use eskers and heath tundra habitats as well, while avoiding boulder fields. They commonly den on eskers, although WKSS research showed that these dens were largely on patches away from the main esker complexes. By working cooperatively with the linked project on physical characteristics of eskers – which gathered detailed information on the physical characteristics of eskers and traditional knowledge about them – the wolf research helped in understanding which parts of eskers wolves choose for denning, and the level of protection these den sites need. Dens were largely found in pebble pavement made up of sand and small stones. The dens were usually found where there was some vegetation – birch, willow and grasses – these were likely useful both for cover and in using roots to provide structural support for the den. Detailed information has been entered into a database for decision-makers to use in the future. Since eskers are an important source of sand and gravel for construction, this information will be important in developing ways to best manage the eskers as wildlife habitat and as a resource for industry.



Dean Cluff

A female wolf captured at Rocknest Bay on Aylmer Lake comes out of sedation after being collared. The collar will be removed after 12 months of study of the wolf's movements and denning patterns.

In addition to habitat use, important new information has been gathered on the ranges used by certain key wildlife species. The Bathurst caribou range appears to be much more extensive to the south-east of Great Slave Lake than previously thought, going right down to the Saskatchewan border. Grizzlies also have been found to have much larger home ranges in the Study area than has been documented elsewhere. The range of wolves, and its interaction with caribou movement, is now much better documented. The home ranges of Wolverines have also been better documented, along with the unexpectedly long distances traveled by some young Wolverine, presumably in search of a home territory.

Caribou habitats were studied intensively through both scientific and traditional knowledge because of the high priority assigned to caribou. The Dogrib traditional knowledge study on Bathurst caribou behaviour documented migration routes and associated Dogrib special places and entered these into a GIS. Key water-crossing points identified by the elders have matched information from satellite-collared caribou. The elders indicated that caribou migration is strongly affected by their ability to smell their food. Areas such as recent burns, or development sites, may block the smell of the food, causing caribou to avoid them. The researchers entered historical fire data from the NWT Centre for Remote Sensing and information on mine developments into their GIS to examine whether these have affected migration routes.

Complementing the Dogrib work was the satellite-collaring project on Bathurst caribou. Over the course of the project anywhere from 7 to 20 satellite collars tracked caribou movements throughout the year to develop a baseline of migration patterns. During the first year of the study the caribou followed the expected pattern of annual movement – north and west of Great Slave Lake. However in the second year the collared animals migrated significantly further south and east, with one actually crossing into Saskatchewan. Similar "unusual" movements were observed again in later years and researchers have now concluded that the winter range of the herd covers a much larger area south and east of Great Slave Lake than previously thought.

Satellite tracking has also been used to show the significant effect of caribou movements on other animals in the study area. In particular a large number of wolves followed the caribou in the winter of 1997-98, including most collared wolves under the WKSS wolf study. Wolves have now been documented travelling hundreds of kilometres to follow the caribou throughout much of the year. Grizzlies in the WKSS area were also affected by the movement of the caribou; the caribou are a primary food source for these grizzlies and it is an important time for their survival when the caribou migrate through their area. Caribou have also been shown to be an essential food source for Wolverine in the region.

The satellite-collaring project on Bathurst caribou was also used to show the calving grounds researchers where the caribou were going to have their calves by showing where they were moving to at calving time. Researchers from the Bathurst Caribou Calving Grounds project examined factors affecting movements in the core calving area from year to year. For example, the types of food available and its energy value were shown to be an important factor, as was the availability of certain types of habitat. Researchers examined the effects of other factors on calving location as well: the rate of green-up and the numbers of certain parasites. Inuit and Dogrib field-team members recorded the amount of time caribou spent on different activities such as eating and walking.

In the Tuktu and Nogak project, interviews with elders showed that Bathurst caribou calving areas move from year to year in a long-term cycle covering a vast area on both sides of Bathurst Inlet. These results expanded on information collected by biologists and confirmed that these cycles have occurred for generations – well beyond the period of scientific record. The results also showed the main factor in these cycles was the localized decrease in food supplies due to concentration of grazing and trampling in the core calving area. Once the animals have depleted the food supply they move to another area.

During the Tuktu and Nogak research several informants observed that spring melt has been happening earlier, leading to more vegetation at calving time, and a greater number of types of plants. They suggested this was due to changes in climatic patterns. Using satellite data, the Bathurst Caribou Calving Grounds project identified a similar trend of warming on the west side of Bathurst Inlet. Increases in availability of vegetation were seen as positive for the herd, although other effects of warming, such as earlier break-up, were expected to be more negative. Effects of climate change on the fall and winter range might also mean that caribou arrive at the calving grounds in poorer or better condition than currently – further research is required here.

Indicators of the possible effects of environmental change on ecosystem health were developed using the traditional knowledge of Chipewyan Dene in the Kaché Tué study. The study involved elders from Lutselk'e in examining changes in activity of wildlife, including caribou, and the underlying reasons for such change in the Kaché Tué area. They also documented seasonal land use, place names, travel routes, key hunting areas and terminology for plants and animals. The results add to our understanding of caribou behaviour, as well as fish, fur bearers and birds – all important parts of the "nene" or ecosystem.

The Kaché Tué study was designed to link with a series of community-based research projects on community health in Lutselk'e, bringing together environmental and social wellness. The indicators of ecosystem health – linked with several different indicators of community health – are being tracked to determine whether changes have been

Brenda Parlee

Packing the boats for a research trip during the Kaché Tué project.

occurring in community health and to relate those changes to the effects of development in the region. The community has developed its own indicators of community health in three areas: self-government, healing and cultural preservation. These indicators are rooted in elders' knowledge about traditional Dene life on the land, and were used as a baseline against which to monitor changes in the health of the community. The research has provided new insights into ways to increase the relevance and effectiveness of community-health monitoring, is providing a baseline for tracking trends in community health and acts as a vehicle for the community to examine and respond to changes. At the same time community members have developed skills and experience.

The skills and knowledge of aboriginal people have assisted research projects in other ways. Hunters were involved in the capture and collection of data in the first ever study of Wolverine in the NWT. Capture rates for collaring the Wolverines went up when local Inuit hunters on skidoos were asked to take over from helicopter-mounted researchers. Researchers and hunters both learned a great deal about wolverines from one another, as well as transferring skills. Students at local schools also participated in the research while learning about wildlife biology through examination of Wolverine taken by hunters.

All this research increases our understanding of the land and the people in the WKSS area, and the effects of development on them. Many other agencies and organizations also collect information which is part of this picture. Ongoing coordination of research and information among all those involved will be key to assembling a complete and accurate picture of the region and the effects of various stresses.

The Study's many partners in the research agenda have been committed to fostering communication and sharing of knowledge among the participants. There continues to be a high level of interest in ways of bringing traditional knowledge and science together. This interest is helping people with widely varying backgrounds learn to work together. The interactions between the members of the WKSS community have helped to build understanding and cooperative relationships that will serve the evolving north, its environment and its people.

Research Projects by Category

Wildlife and Habitat

- Bathurst Caribou Calving Ground Studies: Influence of Nutrition and Human Activity on Calving Ground Location; and Influence of Parasites on Calving Ground Location
- Tuktu and Nogak Project: Inuit Knowledge About Wildlife in Bathurst Inlet: Focus on Caribou and Calving Areas
- Dogrib Traditional Knowledge: Relationship between Caribou Migration Patterns and the State of Caribou Habitat
- Seasonal Movements of the Bathurst Caribou Herd
- Summer Behaviour of the Bathurst Caribou at Mine Sites
- Esker Habitat Studies in the Slave Geological Province (Esker Characteristics)
  - Wolf Denning component extension
- The Habitat of Dogrib Traditional Territory: Place Names as Indicators of Bio-geographical Knowledge
- Vegetation Classification for the West Kitikmeot / Slave Study Region
- Wolverine Ecology, Distribution and Productivity in the Slave Geological Province
- Population Ecology of Grizzly Bears in the Slave Geological Province
- Traditional Ecological Knowledge Research in the Kaché Tué Study Region

Physical Environment

- Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling (3 components)
- Reading Water Quality Record in West Kitikmeot / Slave Sediment

Socioeconomic

- A Community Based Monitoring System in the Slave Geological Province Case Study - Lutselk'e
- Traditional Knowledge Study on Community Health: Community Based Monitoring (2 projects)

Preliminary Projects (no data produced)

- Caribou Calving Ground Project: Habitat Characteristics of the Calving Area of the Bathurst Caribou Herd
- Airborne Dust Level Baseline Monitoring Project
- Lutselk'e Traditional Knowledge of West Kitikmeot / Slave Study Area: Overview, Assessment and Research Planning
- Preliminary Proposal to Develop Three Comprehensive Proposals to Undertake Traditional Knowledge Research Associated with Three Scientific Research Studies
- Preliminary Traditional Knowledge Study and Formation of Steering Committee – Yellowknife Metis Council

Data

The data produced by WKSS projects is publicly available through our website or by request, with the exception of data collected under traditional knowledge projects. Scientific data is posted to our website after it is published, or 18 months after project completion, whichever comes first. It may be made available on a case-by-case basis before being publicly released by making a request to the researcher and the WKSS office, subject to certain confidentiality requirements. Traditional knowledge data is the property of the community where it is collected, and access to data from an individual project must be requested through the appropriate community organization.

Wildlife and Habitat Projects

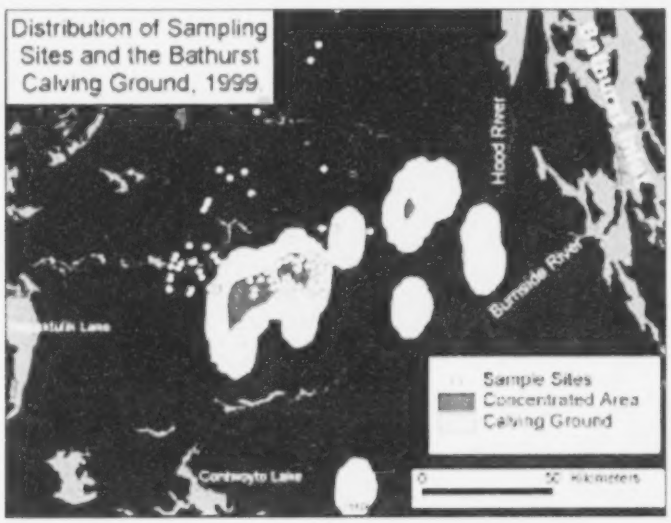
Bathurst Caribou Calving Ground Studies: Influence of Nutrition and Human Activity on Calving Ground Location; and Influence of Parasites on Calving Ground Location

Organization / Researcher: University of Alaska, Brad Griffith; GNWT, Anne Gunn; Canadian Wildlife Service, Don Russell

Length of Project: 3 years (1998-2001)

Personnel involved: Seven researchers and five local trainees.

Total Project Expenditures: $428,826 (Nutrition & Human Activity); $5,000 (Parasites)



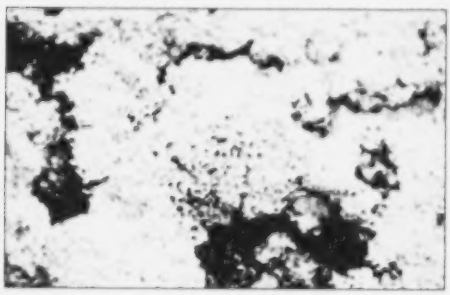
The state of their calving grounds will be a crucial factor in the health of the Bathurst Caribou herd.

This project looked at factors affecting Bathurst Caribou calving ground location, reasons why the calving location changes year to year, and possible effects of different calving locations on the health of the herd. It investigated whether climate change is affecting forage production on the calving and post-calving ranges; it estimated the diet, energy and protein intake of the caribou on the various ranges, and predicted the effect of human activity displacing caribou from important ranges. The project built on initial observations made during the study "Habitat Characteristics of the Calving Area of the Bathurst Caribou Herd" by Mueller, also funded by WKSS.

Each spring most of the Bathurst caribou cows group together and calve in one small core area within their overall calving grounds surrounding Bathurst Inlet. Over the years this core area has shifted hundreds of kilometres. In recent years, caribou have calved to the west of Bathurst Inlet, while for most of the previous 20 to 30 years they calved east of Bathurst Inlet. During both years of this study, the caribou calved in almost the same place near the Hood River.

Most of the research looked at food and nutrition. Caribou cows require sufficient quantities of high quality food plants in order to give birth to healthy calves and nurse them adequately; making milk requires extra protein from the cows. By analyzing the food value and protein content of plants eaten by caribou, researchers found that some varieties of lichen are more digestible than others and have differing amounts of protein: one type, Peltigara, was found to contain ten times the protein of most other lichens. Also high in protein are Oxytropis roots and birch leaves. Grasses and sedges have moderate amounts of protein.

Based on studies of the plant remains in caribou droppings, the animals ate mostly lichen on the calving grounds: at the beginning of calving, lichen made up about 50% of the diet, dropping to about 30% with spring green-up (when they could select other plants). Caribou also ate birch, labrador tea, sedges, grasses and moss, and dug for Oxytropis roots. As a general rule, caribou ate the most nutritious plants they could find in the calving area; these vary from year-to-year according to the weather, temperature and snowcover. It also looks like the caribou calve in areas where there will be a high level of green plants available at the peak of nursing.



Alice Legat

After rain Kwetsjdegwo lichen gets "fat" enough for caribou to eat

Calf growth rates are likely to be lower in the Bathurst herd, because of the lower-quality food available to the nursing cows. Researchers think that the relatively low weights of the Bathurst cows (about 10 kg less than other migratory mainland herds) enables them to more easily nurture a calf as they require fewer calories for themselves.

The amount of energy the caribou use to get their food is also important, since this affects how much of the food is used to improve their body condition, feed their young, build up strength and health etc. compared to how much is used up getting more food. Researchers watched how much time caribou spent in different types of activities and recorded over 70,000 observations. They have found the caribou spend about half their time looking for food and about one-third lying down.

The researchers noted that the forage quality of the Bathurst herd's calving ground is similar to some other herds during calving, but after green-up is only one-eighth as good as that accessible to the Porcupine Caribou Herd and one-quarter that of the George River herd. Once on the calving grounds, and before greenup, Bathurst cows only ate about one-quarter as much food as the cows in the other herds although they spent a very similar amount of time looking for food.

The researchers believe the cows have better-quality range at other times of the year and can make up the difference then. Researchers examined caribou antlers found in the field. Caribou antlers grow in layers and are shed annually; the layers show how the nitrogen content of the diet changes through the course of a year – the inside layers reflect the nitrogen content early in the year, and outer layers show later diet. The analysis showed that caribou seem to begin eating more grass-like vegetation after calving, although this was not statistically significant.

In general the herd is healthy; however a computer model shows that if the herd was displaced north and west from its usual calving area by development activities, the amount of green plant growth available to the cows would be reduced at the peak time of nursing, when they most need it: as the forage quality of the area is already low compared to that of other mainland herds, this could be a major problem for them.

Satellite information was analyzed to find out if global climate change, since 1984, has affected the calving grounds. The east side of Bathurst Inlet showed no evidence of warming, but the west side is getting warmer, causing an increase in green vegetation that benefits the herd.

A sub-component of the study was a preliminary examination of the possible role of parasitic nematode worms in the movement of the core caribou calving areas. The Board does not consider this sub-component study to be an official report of the Society, and its contents are the sole responsibility of the author. Though the worms do not seem to trouble the caribou or affect their health much, a buildup of parasite eggs on the ground may cause caribou cows to avoid certain calving areas or leave a calving area early. During the time of calving and lactation, hormonal changes temporarily relax the immune system allowing a surge in worm egg production in the intestinal tract of caribou cows. Eggs of the parasite *Ostertagia* are carried out of the body in fecal pellets; they hatch into larvae on the ground where they are ingested by grazing cows and calves, to begin the life cycle anew. Researchers collected fresh fecal pellets and found that parasite eggs hatched within two weeks, when the cows and calves were still in the area. The results of the parasite sub-component of the project are still considered to be preliminary pending the submission of revisions to the report.

Tuktu and Nogak Project (Revised December 2000)

Organization / Researcher: Simon Fraser University and the Tuktu and Nogak Board, Natasha Thorpe, Margo Kadlun (1999-2000), Sandra Eyegetok (1997-1999, 2001)

Length of Project: 3.7 years (1997-2000)

Personnel Involved: At least 60 including 35 Inuit elders and members of the Qitirmiut Elders and Hunters, researchers and academics, interviewers, translators and transcribers, and local students.

Total Project Expenditures: $365,616

Sandra Eyegetok

Natasha Thorpe and Nellie Hikok celebrate with smiles after an interview in Kugluktuk. Nellie is an accomplished drum dancer, actor, seamstress, and story teller.

This project recorded traditional knowledge of Inuit elders in Umingmaktuk and Kingauk, Hanigayak (Brown Sound), Cambridge Bay (Ikaluktuuttiak) and Kugluktuk. It is an impressive example of many people working towards a common goal: to assist northern agencies, communities and interest groups in making informed decisions by collecting and providing key baseline information about mainland caribou and calving areas in the Bathurst Inlet area. The information gathered builds

Drawing done by Mary Kilaodluk, Ikaluktuuttiak, 2000, as part of the traditional knowledge research for the Tuktu and Nogak Project: A Caribou Chronicle.

on the Naonayaotit Study sponsored by the Kitikmeot Hunters' and Trappers' Association, which used questionnaires to collect information from community members.

The research was directed by an elders advisory committee to ensure the project was community-driven. Senior research partners and youth assistants from the communities were trained to review other studies done in the area, develop guiding questions and coordinate the project within the communities. Elders and researchers visited places on the land familiar to elders to promote discussion and sharing of information; an elder/youth camp, held in 1998 at the Hiuktak River, was an important vehicle for collecting the elders' knowledge. Community researchers recorded the information on audio and video tape, then translated and documented the knowledge and entered it into a Geographic Information System (GIS). A two-week elders writing workshop took place from late October to early November 1999 to determine direction for the final report, and a writing committee was formed to oversee the writing of it. The draft report was reviewed by English-speaking hunters before translation, then translated into Inuinnaqtun for review by the elders.

The elders agreed that it is important to respect caribou, and to learn to "think like a caribou" as part of showing respect.

The elders conveyed information about traditional harvesting and uses of caribou, historical and current distribution and movements of caribou, caribou behaviour and predators, important habitats, and features of calving grounds. For example, on the food preferences of caribou, they stated:

- caribou prefer areas where the tundra is lush and green;
- caribou know which foods are rich in nutrients;
- they eat grasses and birch and willow in summer; in fall and winter they eat lichen;
- migration routes change when the caribou have eaten most of the lush vegetation in an area.

According to the elders, migrating caribou follow a leader which is generally a cow without a calf. During migration, caribou avoid areas of deep, soft snow. They select calving grounds that are rich in food, free of most ice and snow and far from predators.

The thorough and comprehensive array of detail can be found in the project's final report to WKSS.

Elders also expressed their views on the effects of climate change. They have noticed a warmer climate in the 1990s with an earlier spring and later fall. In particular shore leads have been opening earlier, the ice is thinner, water levels have dropped and vegetation is larger and more lush. The caribou have shifted their migration to these areas of larger, lush vegetation and this has been a positive effect for the caribou. The

earlier melting of ice in rivers, lakes and the coast has also resulted in changes to migration routes, and caribou now seem to be avoiding rivers as the rushing water filled with large chunks of ice is dangerous for them. Elders also believe that earlier melting is resulting in caribou falling through thin ice where it used to be thick, and that the incidence of drowning is increasing. They also noted that there seem to be more freeze-thaw cycles which leave vegetation coated in ice, and much less accessible to caribou for food.

This study has exchanged information with scientific studies on caribou. The information may also be used in studies on Grizzly Bears, wolves and Wolverine.

Dogrib Traditional Knowledge: Relationship between Caribou Migration Patterns and the State of Caribou Habitat

Organization / Researcher: Dogrib Treaty 11 Council

Project Length: 4 years (1996-2000)

Personnel involved: At least 35 including the research team (5) and members of community elders committees.

Total Project Expenditures: $743,743

This project recorded traditional knowledge from Dogrib elders about caribou movements and habitat, and the relationship between the Dogrib and the caribou. Research was directed by an elders advisory committee. Community researchers began by working with elders, a Dogrib language specialist and the principal researcher to record Dogrib terms describing caribou habits, caribou parts and uses, caribou distribution and habitat. Researchers and elders together collected and identified caribou food in the boreal forest and the barrenlands. Researchers also examined all existing materials on traditional knowledge about caribou.

Allice Legat

A typical caribou crossing, or place where caribou can cross the water more easily. Caribou crossings are critical for protection because a large proportion of the herd funnels through them.

The elders indicated that they feel that scientific studies alone do not provide enough information to properly manage wildlife, and that traditional knowledge is an important part of such management.

The elders stated that the Dogrib have a close and respectful relationship with the caribou. The caribou show respect by travelling to the Dogrib from their calving grounds, which the Dogrib view as the home of the caribou. When the Dogrib harvest the caribou, the animal's spirit is reborn and the population will remain strong. The Dogrib demonstrate respect by only taking what is needed, using all parts of the animal, discarding unused parts respectfully and having and sharing knowledge of the caribou.

The first part of the study recorded oral narratives about places where caribou are found, and about caribou behaviour. The researchers reported that the Dogrib believe that it is human behaviour that is the most important factor affecting caribou migration and that the elders agree on the following general points:

- caribou have unpredictable migration patterns but when they migrate to particular areas they are more likely to use certain trails and water crossings;
- caribou follow the same annual cycle each year and return to the same calving grounds;
- caribou leaders (called "k'aawo", usually middle-aged cows) have good memories;
- caribou migrate to where the vegetation is lush and will remain in an area if the vegetation is easily accessible and plentiful;
- caribou have a strong sense of smell which they use to find their food;
- caribou are fairly adaptable to changing environments but this can work against them as they may become accustomed to contaminated or hazardous areas;
- caribou's survival and continued annual migration is dependent on the respect shown to them by humans;
- only a few people have a *spirit connection* with the caribou, and the knowledge and intelligence that comes from this; these people know where caribou are at any given time but cannot predict where the caribou will migrate to in future.

The elders identified many locations of caribou water crossings, traditional caribou fences and harvest locations, which were mapped and put into a computer Geographic Information System. Ninety-eight place names related to caribou were documented and mapped. Researchers were told about caribou behaviour, how caribou break trail, how they find food and avoid insects, why and how caribou choose their travel routes, their movements between woodlands and barrenlands, and which individuals within the herd become "leaders." They noted that caribou move into the trees in winter both for warmth and because the snow is less packed, making it easier to dig for food.

The elders also noted there are two modes of travel for caribou: in "migration mode" the caribou will go over anything in their path to reach their destination, while in "grazing mode" they are more easily deflected. Fall migration into the trees appears to start at the same time as freeze-up, while the spring migration to the calving grounds begins when the weather is warmer and the snow is slushy.

To determine if there appeared to be changes in the health of the herd or its migration patterns, the elders were asked to provide year by year information from 1917 to 1998 on the condition of caribou harvested and whether there were enough caribou to feed the camp. Particularly poor years were 1922, 1929, 1934, 1955 and 1956 and there were 26 years between 1947 and 1997 when at least some caribou were underweight. The elders also agreed that caribou stopped migrating to the Wha Ti area for some 30 years beginning in the late 1950s "because a young boy hit a caribou with a stick," showing disrespect. The researchers noted that the late 1950s was the period when the Ray Rock uranium mine was in operation; and that caribou harvested near the treeline were skinny and not plentiful enough to feed the camps.

The researchers observed that the distribution of caribou harvest locations over the last 70 years seems to rotate around a very large area centred on Wekweti with major shifts every 10-20 years. They also indicated that harvesting did not appear to be disrupted by past mining exploration or operation.

Dogrib examine the contents of mouths and stomachs when they harvest caribou, so the elders were able to provide detailed information on the seasonal diet of caribou going back many years. While there are too many to mention, the main foods found were:

- (fall season) – lichen, particularly white lichen, and grasses and sedges;
- (winter season) – white lichen, tree lichen, grasses and sedges;
- (spring) – white lichen, grasses and sedges.

In relating this knowledge, the elders interviewed would only speak about what they clearly remembered; they wanted to ensure they provided correct information.

The elders did not claim to be able to predict where caribou will go or how they may react in a new situation, such as mines and associated development activities. They have observed that caribou become used to loud noise from aircraft, and that caribou will stand on land cleared for development, perhaps because there is no cover for predators. They are concerned that caribou would become so accustomed to mining activities that they may roll in contaminated tailings instead of their usual mud as a means of insect avoidance. They are also concerned that caribou in grazing mode may change their movement patterns to avoid noise or other distractions associated with mines.

Elders emphasized the importance of smell to the caribou, and explained that caribou follow the smell of the most lush vegetation and don't go where fires have been because they can't smell their food, but instead smell burnt vegetation. They stated that migration is dependent on the state of the habitat, and that caribou always go to the best vegetation available in any given year; some elders worry that caribou may alter their migration routes due to the smell of oil and gas from developments, which may overpower the smell of the food source that normally helps guide the animals to the best range.

Seasonal Movements of the Bathurst Caribou Herd (Revised May 1998)

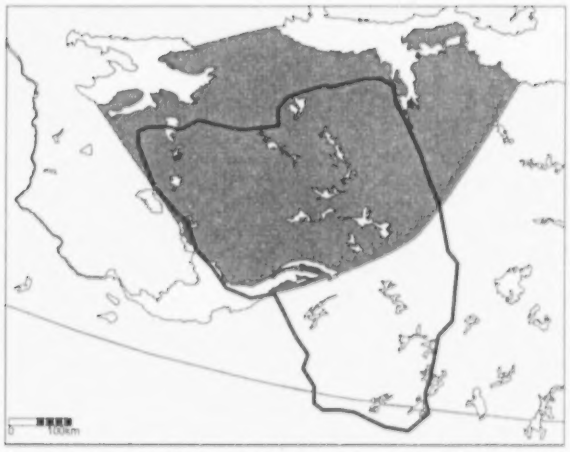
Organization / Researcher: GNWT, Anne Gunn

Length of Project: 5 years (1996-2001)

Personnel involved: Two principal researchers and a statistician.

Total Project Expenditures: $552,900

This project gathered information on caribou movements by collaring Bathurst caribou with satellite transmitters so they could be tracked throughout the year. The Ekati and Diavik mines are located on spring migration, summer, fall and rut ranges of the Bathurst herd, and the movement information will assist in assessing whether these mines and other projects are affecting the movements of the caribou. It also provided crucial information on the range of the herd and helped determine the core calving area each year. Other details, such as snow depth and rates of spring snow melt, and temperatures and amount of wind (which affect insect activity) were recorded to assess their significance in the movements of the caribou within the calving ground.



The known range of the Bathurst caribou has been expanded significantly by the WKSS study. Lined area represents the previously mapped range. The section of the map outlined by the bold, black line indicates additional range area documented during the WKSS study from 1996 to 1999.

This project was done in cooperation with the *Dogrib Traditional Knowledge: Relationship between Caribou Migration Patterns and the State of Caribou Habitat* and the *Tuktu and Nogak Project* to provide a more holistic knowledge base. The study was allied closely with the new *Bathurst Caribou Calving Ground Studies: Influence of Nutrition and Human Activity on Calving Ground Location;* and *Influence of Parasites on Calving Ground Location* study (see p.27).

The project originally collared 10 cows. In late 1998 an increase to 20 collars was approved. Researchers attempted to randomly collar cows; with cows being chosen because the movement information would help determine the time and location of calving each year. Several caribou died natural deaths or disappeared during the course of the study, or were shot, and a few of the collars did not transmit consistently, so that the number of cows tracked at any one time ranged from six to 19. Over the life of the study 31 different cows were collared. Most collaring-related captures were observed by elders or community representatives.

The study has provided baseline data on weekly and seasonal movements of the herd. Caribou movements were tracked daily by satellite during calving and post-calving, and weekly after that. Maps were produced and distributed.

The number of caribou collared is small compared to the 350,000 caribou estimated to make up the Bathurst herd. In analyzing the caribou movement patterns, the researchers assumed that the collared caribou represent overall herd movement rates; an assumption they think is reasonable during migration periods. They investigated how representative the movements of the collared cows were in relation to the entire herd by overflying the area around the cows, but did not present specific conclusions.

The range of the herd has been found to be much larger than earlier estimates, with summer range being the most predictable year to year and the area used during rut varying the most. In addition to their previously defined wintering area north of Great Slave Lake to the treeline, the Bathurst herd was found to be wintering southeast of the lake in what had formerly been considered to be exclusively winter range for the Beverly herd. Longer term data seems to indicate that changes in areas used for winter range may be rotations to areas of greater forage availability: areas not used for some time and which have not been burned, and where snow conditions do not limit availability.

Areas used by satellite-collared Bathurst caribou during winters from 1998 to 1999

Winter Range: For 1996-1997, the collars showed the caribou wintering north and west of Great Slave Lake. However the following year, 1997-1998, they appear to have largely wintered south and east of Great Slave Lake. Information from the collars for the winters of both 1998-99 and 1999-2000 suggests the winter range is more extensive than previously thought,with some animals travelling south and east of Great Slave Lake and some to the north and west. The overlap between successive winter ranges was variable, from no overlap some winters to 75% overlap in others; the herd appeared to switch their winter range from northwest of Great Slave Lake to southeast of the lake all the way into northern Saskatchewan.

Summer Range: The collared cows were in an area west of Bathurst Inlet near the Hood River during calving in 1997, 1998, 1999 and again in 2000. The location of calving grounds varied less than other seasonal ranges but was not exactly the same year to year. Each summer the calving ground was made up of about half the previous year's range plus additional land; but over the course of five years of study, only 1.4% of the combined area of calving grounds was repeatedly used.

Though the location of the calving grounds appears to be fairly predictable, the winter range varies considerably, so migration routes to the calving grounds are not predictable. Daily travel during calving-related migrations was about 20 km/day. There was only a weak suggestion that mosquito and warble fly activity affected caribou movements.

Limited data on timing of cotton grass flowering and snow depth was gathered as it relates to the core calving area. The Study suggested that snow cover likely affected the rate of spring migration, but noted that effects of snow depth were studied in greater detail in the WKSS Calving Grounds research (see p.27). Data on the timing and amount of cotton grass flowering showed that timing varied from year to year while production remained fairly constant. The Calving Grounds research also did more research on this subject.

Summer Behaviour of the Bathurst Caribou at Mine Sites

Organization / Researcher: GNWT, Anne Gunn

Length of Project: 3 years (1996-1998)

Personnel involved: At least 15 including the relevant Hunter and Trapper Committees, the Dogrib Renewable Resources Committee, The Yellowknives Dene Land and Environment Committee and the Lutselk'e Land and Wildlife Committee.

Total Project Expenditures: $72,530

Government of the NWT, RWED

A view of the wood and rope "fence" with plastic flutters (based on a traditional Dogrib design). The fence was successful in redirecting the movements of caribou. Actual height of the fence is approximately three feet.

The Board does not consider this report to be an official report of the Society, and its contents are the sole responsibility of the author.

Significant exploration and mining developments are taking place around the Bathurst caribou herd's calving grounds and migration routes. Caribou seem to be attracted to mining infrastructure such as tailings ponds, airstrips and roads.

In this project, researchers and remote cameras observed caribou behaviour around mine sites and tested two methods of diverting caribou from mine sites and other developments. Near Lupin mine, a wood and rope fence with plastic flutters – based on a traditional Dogrib design – was successful in restricting the movements of caribou. None crossed the wood and rope fence once it was completed. The second method involved laying a sheet of plastic on the ground and was less successful: almost half of the caribou crossed the plastic.

Native elders were involved in designing the tradition-based test barrier and in observing and commenting on the caribou behaviour. Researchers also measured temperature, wind and fly activity, and documented other caribou behaviour around the mine site. It was observed that caribou were resting on tailings areas and feeding nearby even when mosquitoes were not present, possibly because there is no cover to conceal predators.

Researchers also collected plants and measured dust levels near roads and tailings ponds to see whether dust affects plants growing in the area. Minor effects were observed at one of two sites – lower vegetation cover and absence of dwarf shrubs.

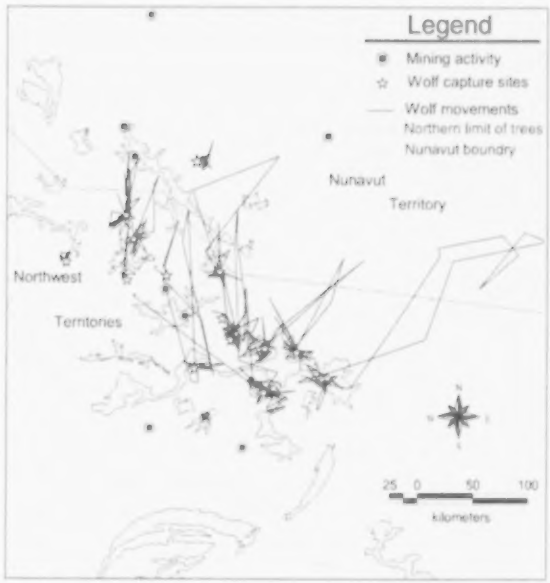
Esker Habitat Studies in the Slave Geological Province: Movements and Habitat Use of Wolves Denning in the Central Arctic, Northwest Territories and Nunavut, Canada

Organization / Researcher(s): GNWT, Dean Cluff; DIAND, Stephen Traynor

Length of Project: 3 years (1996-1999)

Personnel involved: GNWT component – a graduate student; Dene elders and seven community-based volunteers from Lutselk'e and N'Dilo participated in some of the flights for radio-tracking and den site observation. DIAND component – three researchers and three co-op students

Total Project Expenditures: $498,389



Summer 1998 movements of wolves captured in the central Canadian Arctic.

Wolves migrate great distances in winter following caribou. In the summer they take "excursions" from their dens, usually about 2-1/2 - 4 days in duration. Caribou are limited in the denning area in the summer, so these excursions (being generally northerly), are likely to prey on caribou.

Eskers, the long ridges of sand and gravel left behind when the glaciers melted, are important for many reasons. Of interest to this study is their use by Gray wolves as denning habitat. Eskers are also valued as a source of gravel and sand for roads, airstrips and other development infrastructure. Archaeological sites are often found on eskers. This project provided baseline information on eskers in the study area. Eskers in the Lac de Gras/Contwoyto Lake area were identified, counted and recorded on maps. Archaeological sites on eskers were documented in relation to various land attributes such as proximity to a water source. Wolf den locations were documented and analyzed in relation to esker characteristics. Wolf movements and habitat use among denning wolves were traced using satellite and radio collars.

Approximately 370 eskers in areas around Lac de Gras, Contwoyto Lake, Nose Lake, and west of Bathurst Inlet were identified. Of these, ten were not shown on existing maps of the area. The esker locations have been entered into a Geographic Information System (GIS), in cooperation with the Nunavut Planning Commission. Information gathered included percentage of eskers covered by vegetation, esker shapes and drainage patterns. Seventy-six granular samples were taken from eskers, analyzed and found to contain predominantly sand covered by stone and pebbles. Very little silt or clay was found. Within the study area, 150 heritage sites were located and 20 new heritage sites were identified; 44 of the sites were examined, documented and photographed. In

Dean Cluff

Lyle Walton attaching a Global Positioning System (GPS) radio-collar to a wolf near Thonokied Lake (just east of Lac de Gras). Two GPS satellite collars were deployed on study wolves; the remainder were traditional VHS and satellite collars.

general these sites were located at or near the top of the esker with a water source within 1,000 metres (80% of sites visited were within 1,000 metres of a water source and 64% were on eskers). Thirty-one percent of all archaeological sites in the region are on eskers.

All the wolf dens were found on or near eskers or other glacial features such as kames; most dens were found on smaller patches away from the main esker complexes, possibly because of greater vegetative cover and/or to be less visible to caribou using the eskers for travel. Caribou are a main source of food. Eighty-one active wolf dens, some not previously known, were mapped and entered into the digital database. Dens were found mainly in pebble pavement made up of sand and small stones. The dens are usually located where there is some vegetation such as birch, willow and grasses; this may be for cover and/or because roots provide structural support for the den.

Over the length of this project 58 wolves were collared, usually the dominant female in a pack, and mostly individuals from different packs. Use of collars allowed researchers to document large-scale movements of individual wolves, and to check fidelity to denning sites.

In the winter of 1997-98, wolves traveled straight line distances of 300 to 600 km following the Bathurst caribou as they moved south towards the Saskatchewan border. By May 1998, all but two of the collared wolves who survived the winter had returned to the same denning area used the previous year. During the denning period their movements are constrained, and this may explain the excursions that were observed; during the denning period, lactating females are forced to search large areas for prey but must return within a day or two; one female was found to cover 92 km in less than 22 hours. The following winter some of the wolves traveled west to the area between Wekweti (Snare Lake) and Gameti (Rae Lakes), while others moved east of Great Slave Lake.

The data seem to support the idea that wolves return to natal denning areas, though not necessarily using exactly the same den. In 1998, two female wolves were found to use the same den, while two male wolves were found to have joined different packs in different denning areas more than a hundred kilometres distant. In 1999, all collared wolves returned to within 25 km of their previous year's den, though the actual den sites could not always be found. Pup counts ranged from three to eight per den. Fewer wolf pups were seen at den sites in the summer/fall of 1999 compared to the previous year (3.1 pups/den in 1998; 4.6 pups/den in 1997).

Documented movements showed that average summer range size was 589 square km for females and 2,273 square km for males. A study of summer habitat preference showed the wolves prefer eskers over all other habitat types; likely because dens are associated with eskers.

Average winter range was much larger than summer range, 40,507 square km for both sexes together. This is about 18 times the size of the average male summer range and almost 70 times the size of the average female summer range. These results are similar to those for other wolves which rely on caribou as their main food source. Most other wolf studies have found they remain in fairly stable territories throughout the year, and rely on resident, rather than migratory, prey. It is not known whether the WKSS study wolves follow particular groups of caribou to their current wintering areas (which change year-to-year) or simply travel to areas where they will likely encounter caribou.

All satellite collars have been removed as they transmit for just one year, but since conventional VHF radio-collars may continue to transmit for at least five years, they remain on some of the wolves to further monitor whether they repeatedly return to the same den sites.

The Habitat of Dogrib Traditional Territory: Place Names as Indicators of Bio-geographical Knowledge

Organization / Researcher: Dogrib Treaty 11 Council

Length of Project: 4 years (1997-2001)

Personnel Involved: At least 40 including the research team and members of the community elders committees.

Total Project Expenditures: $940,536

Alice Legat

Madeline Chocolate and Jimmy Martin follow a caribou trail. Elders explained the importance of this place for berries (in lower area), caribou travel, and looking for caribou.

This study analyzed Dogrib place names for linguistic patterns as a way of classifying habitats. The main objectives were to clarify the conceptual and literal meaning of Dogrib place names, to analyze this information in the context of existing literature on traditional knowledge, to collect vegetation samples and map vegetation communities with Dogrib elders and to check whether Dogrib place names do in fact describe what is found in the field. This study used a research method similar to the Dogrib traditional knowledge of caribou study (*Dogrib Traditional Knowledge: Relationship between Caribou Migration Patterns and the State of Caribou Habitat* - p.31): an elders committee guided a research team consisting of researchers working with elders to compile traditional knowledge. Originally this committee was composed only of elders from Rae, but was expanded in 1999 to a regional committee, with community elders committees providing direction on interviewing and the regional committee verifying the information.

In 1997, traditional knowledge on habitat around Lac de Gras was collected, including stories connected to traditional place names. Place names were corroborated by elders and put into a Geographic Information System (GIS) together with existing information from other sources such as the Dene Cultural Institute, the Arctic Institute of North

America, GNWT and the Dogrib Treaty 11 Council. Maps were produced and the traditional knowledge information was combined with satellite imagery maps from the NWT Centre for Remote Sensing (see also "Vegetation Classification for the West Kitikmeot / Slave Study Region" report, p.41) as a way to investigate potential joint habitat classifications.

In 1998 the research team went back to the Lac de Gras area. They also visited the Russell Lake and Mosquito Creek areas (near the community of Rae) and the Faber Lake area (near the community of Gameti). Thirty interviews totaling 53 hours were carried out, and 1,491 entries were made to the GIS.

In 1999-00 research camps were conducted at Stagg River, Faber Lake, Gameti (Rae Lakes) and Point Lake and 43 interviews were conducted with 20 elders. Vegetation and habitat information were again the focus. Twenty-one taped interviews were summarized and/or translated. There were 1,867 entries were added to the GIS. At Stagg River, 32 elders worked with the research team to document flora, fauna and the Dogrib habitat classification for the area. At Faber Lake, nine Gameti elders together with the community elders committee documented Dogrib habitat classification using taped interviews, field forms and photographs of flora and fauna. At Gameti, the elders committee and seven elders documented Dogrib habitat classification. At Point Lake, twelve elders worked with the team to document the habitat types.

At least 310 Dogrib place names (out of a possible 3,548 sites) were analyzed in detail in this study. An interesting pattern emerged. All place names were associated with caribou hunting and associated travel. Place names using terms for topographical features or water flow helped to make travel safer and easier; these included landmarks, areas where caution was needed to avoid hazards, or safe travel areas. Place names using biological terms such as those for flora and fish, provide information as to where resources such as food sources or wood (for barrenland travel) should be available. The oral narratives associated with each place name are critical to understanding the meaning of the name: the names contain a lot of detailed information and cannot be translated in a simple manner without the knowledge and experience of those familiar with the area. Properly used, the researchers state, the place names and stories together provide reliable baseline information.

According to the research, the Dogrib divide their traditional territory into four habitat zones:

- Nodii – the plateau area west of Camsell River including the Horn Plateau where woodland and barrenland caribou are hunted, small fur-bearers are trapped and some important medicinal plants are found;
- Detsita – heavily forested area of low hills and rock outcrops east of Camsell River with progressively decreasing forest cover toward the barrens;
- Detsits'onee – just below the treeline area; and
- Hozii – the barrenlands.

Many vegetation types are found within these zones of which 34 were documented, some in greater detail than others. The men and women consulted at the various sites had different knowledge, women understanding more about plants, and men more about hunting and trapping aspects. It was noted that this difference in knowledge was significantly less for elders over age 80.

The researchers also asked elders to identify vegetation types at areas where they had been in the past. The intent is to verify this information at a later date as a test of the reliability of these "predictions." They suggest that these sites, whose names are associated with specific resources, can be monitored for change over time.

Vegetation Classification for the West Kitikmeot / Slave Study Region

Organization / Researcher: Northwest Territories Centre for Remote Sensing, Helmut Epp

Length of Project: 4 years (1997-2001)

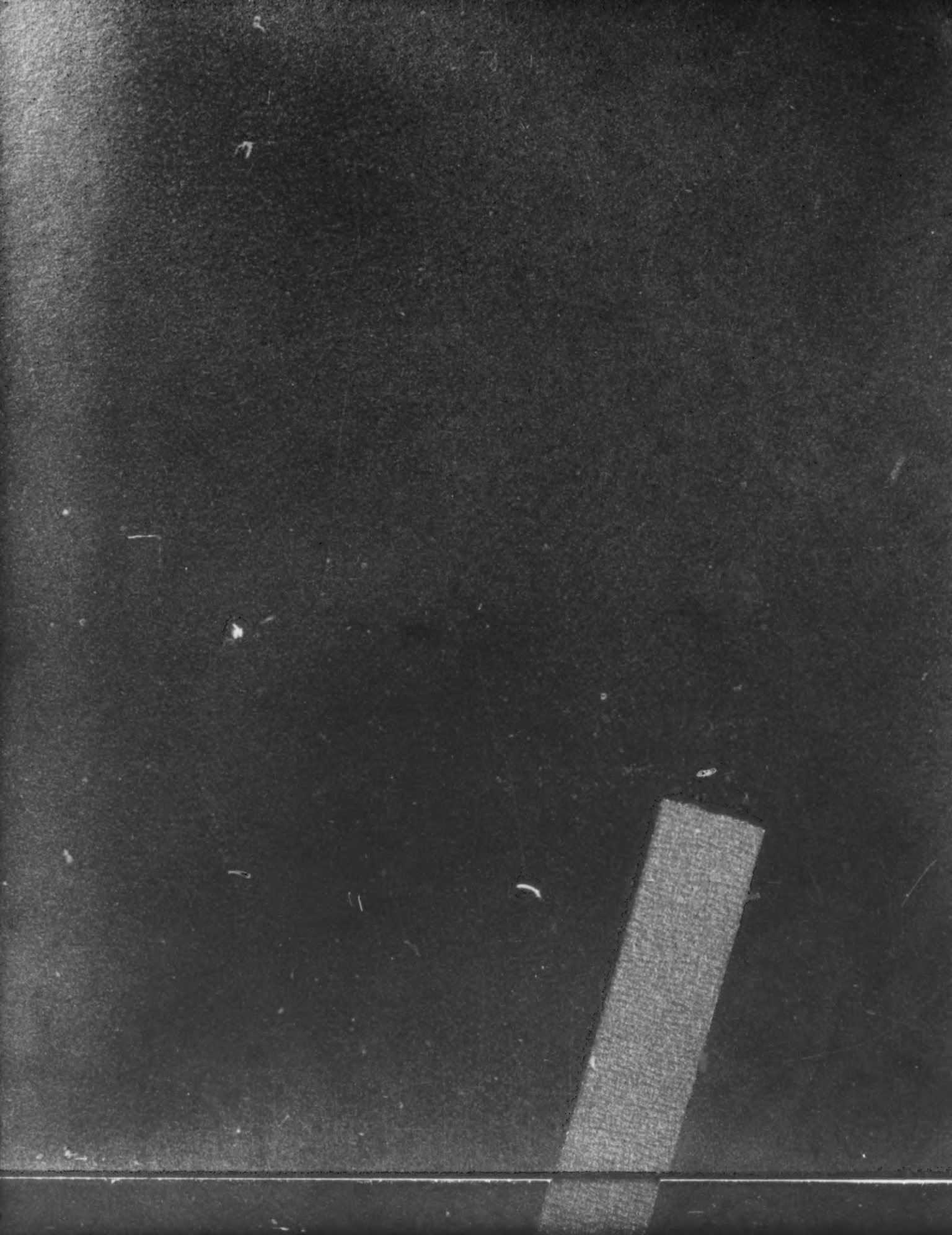
Personnel Involved: n/a

Total Project Expenditures: $404,975

Eight overlapping satellite images, covering approximately 200,000 km² were analyzed in order to develop the classification system. Satellite images are particularly useful for studies and planning in large, remote areas such as the WKSS area.

Information from Landsat satellite images was analyzed by a computer to make vegetation maps of the region. The project worked in cooperation with the *Habitat of Dogrib Traditional Territory: Place names as Indicators of Bio-geographical Knowledge project* (see p.39) to produce a joint habitat classification in the Lac de Gras area. This information is useful for all researchers doing wildlife studies in the West Kitikmeot / Slave Study area, as well as for identifying important vegetation / habitat areas and assessing effects of development.

Eight Landsat scenes have been analyzed covering a total area of about 200,000 square km. This area includes most of the WKSS region except for the areas immediately north of Great Slave Lake and parts of the eastern and western edges of the SGP. Nineteen classifications were used: fourteen vegetation units, three unvegetated and two for water. Some scenes do not contain all 19 types. Ground data was gathered from 300 to 500 sites for each scene to provide information for testing and increasing the accuracy of the computer's classification of the satellite imagery. About 150 hours of helicopter time was spent over the four years of the project in collecting ground data through on-ground observations and photos from the air. The accuracy assessment from scene to scene varied from 51% to 82% correct.



Helmut Epp

Dave Taylor works on habitat image analysis at the NWT Centre for Remote Sensing. Computer analysis and work out on the land were both needed to develop the habitat classification system.

An analysis of the amount of area under each classification shows certain types such as heath tundra and heath boulder are many times more common than others such as birch seep or esker complex.

These results have been used by several other WKSS wildlife studies in their analysis of habitat use, as well as in assessment and monitoring of some proposed developments.

The results of this project are still considered to be preliminary pending the submission of revisions to the report.

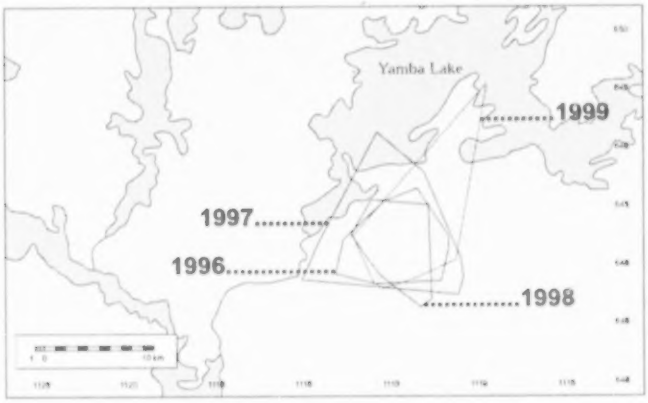
Wolverine Ecology, Distribution and Productivity in the Slave Geological Province

Organization / Researcher: GNWT, Robert Mulders

Length of Project: 4 years (1995-1999) (WKSS funding provided 1996 to end)

Personnel involved: At least 30 including experienced Wolverine hunters, wildlife officers, biologists, technicians, and pilots. School classes were visited as well.

Total Expenditures (WKSS funding only): $281,650



This map shows the annual home range of one female Wolverine from 1996-1999. Her range averaged 214 km². Among all females studied, the average range was 126 km². Males had a considerably larger average range of 404 km².

Wolverines are solitary animals that live and breed in large areas of undisturbed land. Developments like roads and mine sites could pose a danger to Wolverine populations by making over-hunting possible and reducing the amount of Wolverine habitat available. This study set out to establish Wolverine distribution and home range size, denning locations and fidelity to den sites; to estimate the reproductive rate; and to document harvesting intensity, composition and locations in the Slave Geological Province. A further objective of assessing the impact of winter roads on Wolverine was

Robert Mulders

Kyle Algona of Kugluktuk holds a Wolverine being recollared and released just south of Daring Lake (February 1999). Skills of Inuit hunters have been crucial to the capture of Wolverine for this study. Algona and his father live on the land with their family eight to nine months each year.

dropped as there was insufficient time and resources to collect the information.

It was the intent of the study to document the location and size of Wolverine home ranges by use of radio collars. A total of 36 Wolverines (21 female, 15 male) were captured, fitted with radio collars and tracked. The animals were mostly captured by experienced hunters on snow machines, and with baited barrel traps. However, tracking Wolverine by radio collar proved challenging. Two slipped their collars within days of deployment, eleven others dropped their collars prematurely, two collared females were thought to have died of natural causes, and two others died as a result of collar-induced infection. Thirteen radio collars went "missing" from the study area; it is not known whether the animals moved out of range of the study area or whether collars failed prematurely.

The most reliable results came from seven mature adults: typical home ranges were found to be 126 square km for females and 404 square km for males. This is smaller than adult home range sizes reported in some other areas. Close comparison with other jurisdictions is difficult, however, since the smaller quantities of location data obtained in this study can bias calculations, with a tendency to underestimate actual home range size.

Because of problems with the use of collars, there was not enough data from the remaining Wolverines to reliably calculate their home range sizes. It was possible, however, to document some of their movements. Yearling Wolverine are more transient and cover greater distances than adults; yearling home range area may be as high as 8,736 square km. The longest recorded straight-line movement involved a juvenile male travelling more than 300 km from Daring Lake to the Lutselk'e area over just a few months. Given the problems associated with radio-collaring Wolverine, the researcher recommended that another tracking system be used in future such as a different design of collar or use of implant transmitters.

Captured adult females were examined to assess their reproductive status and determine whether they were nursing or pregnant. The pregnancy rate of 72% was similar to rates estimated for Yukon and British Columbia; somewhat less than Alaska. Dens were not excavated, so there was little insight gained on the questions of litter size, types of dens used or the level of fidelity to natal den sites.

During four years of monitoring the Kitikmeot Wolverine harvest (1995-96 to 1998-1999), 473 Wolverines were examined from the Kugluktuk and Bathurst Inlet areas. On average, 78% of the animals were shot, 15% involved quick-kill traps, and 4% involved leg-hold traps. The Wolverines taken appear to have been in good health. Close to 70% of the animals harvested were either yearlings or juveniles.

Examination of 373 stomachs from harvested Wolverine showed that 25.7% of the stomachs were empty. Some 62% of the stomachs contained caribou. Other food items

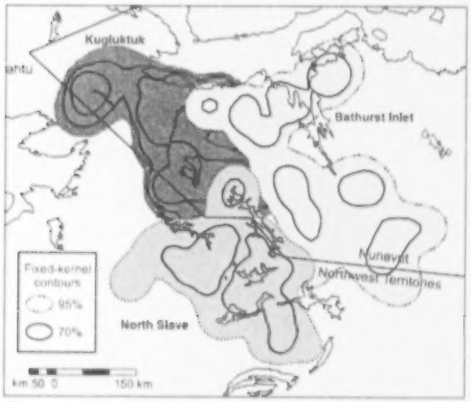
included Muskoxen, Ground squirrel, Arctic Hare, lemmings, Arctic and Red Fox, Wolverine and vegetation was found in 6% of the stomachs.

Population Ecology of Grizzly Bears in the Slave Geological Province (Revised January 1998)

Organization / Researcher: University of Saskatchewan, Francois Messier / GNWT, Ray Case

Length of Project: 5 years (1995-1999) (WKSS funding provided from 1996 to end)

Personnel involved: At least 20 including graduate students, Inuit and Dene hunters and staff from BHP, Diavik and the Government of the NWT.



Three population clusters were identified for both female and male grizzlies. Though the female populations did not overlap, the ranges of the males did. The results suggest that the three bear populations must be managed together.

Total Expenditures (WKSS funding only): $1,138,489

Before this project, few studies had been done on barren-ground Grizzly Bears in the central Arctic. If these bears are to withstand the environmental changes brought about by development activities, including mining, it is important to know what type of environment and how much space they need. The study originally focused on the Lac de Gras area but was expanded in 1997-98 to include areas north of Contwoyto Lake, east of Tree River and east of Bathurst Inlet; all of these areas have high potential for development.

Of 264 bears captured during the course of the study, 81 have been tracked by satellite collar (all collars were removed by the end of the study). Distances covered by bears in their home range are larger than previously reported for Grizzly Bears in other areas. Young males move over very large distances while adult males and females stay in large, but more defined areas. Individual adult males in this study covered an area averaging 6,685 square km each year (larger than the entire area of Banff National Park); female home ranges averaged 2,074 square km.

The bears appear to be in three groups; the groups are roughly centred on Bathurst Inlet, Lac de Gras and Kugluktuk. The researchers conclude that due to the high overlap and exchange rates between these population clusters, barren-ground Grizzly Bears in the study area will have to be managed as one continuous population. This is an important management consideration because the large ranges may put individual bears in contact with humans even when developments are hundreds of kilometres from the animal's core home range.

All bears moved greater distances in spring and early summer, with decreasing travel distances in autumn. The movement patterns and large home range sizes allow the bears to access certain key habitats, especially eskers (linear sand/gravel deposits left by glaciers), tall shrub riparian (birch, willow, alder up to 4m tall near running water), tussock/hummock areas and birch seep (areas of boulder fields where birch grow in

Robert Gau

Barren-ground Grizzly Bears have larger home ranges than any other type of Grizzly Bear. Satellite collars were useful in tracking such huge home ranges. Here researcher Ray Case prepares to attach an ear tag to an adult male. Pilot Mark Hutchison is on the left.

seeping water). Choice of habitat is thought to be guided by availability of different foods, for example:

- eskers and exposed bedrock in early spring as these are the first areas to become snow-free, providing access to the previous year's berry crop;
- lichen veneer areas when caribou are passing through; or
- tall shrub riparian habitat for willow buds, sedges and horsetails.

The nutritional component of the study found there are three (of five) "seasons" when the bears eat mainly caribou (spring, mid-summer and autumn); they concentrate on green vegetation in early summer and berries in late summer. This diet is somewhat different from Grizzly Bears in other locations.

There were some significant differences between male and female habitat selection during different seasons; females with cubs may have been avoiding adult males during much of the year by avoiding habitats preferred by males. Males are known to prey on females and their cubs.

Most bears denned in late October of each year, emerging in early May. Eskers, which previously had been regarded as the major denning habitat for barren-ground Grizzly Bears, accounted for only seven of 56 den sites studied. Most dens, about 60%, were found in heath tundra habitat or heath tundra with boulders. About 13% were located in esker habitat. Four other habitat types accounted for the remaining 15 dens. Most dens were on south-facing slopes, constructed under cover of tall shrubs, and containing mats of crowberry vegetation for bedding.

Traditional Ecological Knowledge Research in the Kaché Tué Study Region

Organization / Researcher: Lutsel K'e Dene First Nation / Brenda Parlee

Length of Project: 2.5 years (1998-2001)

Personnel involved: At least 14 including members of the Lutselk'e Dene First Nation Elders' Committee, members of the Band council, the Wildlife, Lands and Environment Committee, other community members and the researchers. The project employed three researchers and two full-time local trainees.

Total Project Expenditures: $395,536

This project recorded traditional knowledge of Chipewyan elders from Lutsel K'e on the ecology of the Kaché Tué study region, an area north from the shores of the East Arm of Great Slave Lake to just south of MacKay and Clinton-Colden lakes. Kaché Tué is a sub-region of a larger area called *Katthinyne*, an area of great diversity and abundance, the traditional territory of the Lutselk'e Dene. The information collected includes traditional land use, significant cultural/spiritual sites and Chipewyan terminology. Key species, their habitat and the effects of resource development on them were the main focus. One important objective was to use traditional knowledge to

Elders drew pictures to convey their knowledge: making drawings and discussing drawings also helped Elders recall their knowledge and memories. This drawing of fish swimming under ice at Abymer Lake is by Nikita Enzoe (2001).

establish indicators of ecosystem health as a tool for future cumulative effects monitoring.

An Elders Committee and Steering Committee directed the course of the research, with the elders being the main source of information. Researchers worked with elders to understand the meaning of their stories, and document them in written form and with maps. Workshops were audio/video recorded, and a Geographic Information System (GIS) developed so the information would be easy to find and understand. Community researchers were trained in research methods and associated skills. Training included: the use of audio/video equipment, Chipewyan literacy and terminology, translating and transcribing, data management, and GIS mapping.

The project made use of trips on the land as a way to stimulate participants' memory recall. Terminology for place names, wildlife and vegetation was collected and verified, along with knowledge about wildlife behaviour and habitat of the various species of migratory birds, fish, caribou, and fur-bearers. Results of this phase of the project provided preliminary indicators for the health of these species, including:

- birds: body fat, abundance and diversity, changes in migration patterns;
- fish: size to weight proportion, condition of organs, taste, flesh colour;
- caribou: abundance, changes in migration routes, body fat, changes in behaviour, respect shown by people to the animals; and
- furbearers: abundance, fur quality (poor quality indicating changing climate).

The indicators were refined and then analyzed in the context of indicators of community health collected during a previous study, *Traditional Knowledge of Community Health* (see p.50). This analysis found that ecological health is inextricably linked with community health, reflecting the close ties between the people and the land.

A system of ecosystem classification was also developed with elders, landscapes being divided into four main types:

- flat land (subdivided into several types including treeline sheltered with dry wood, high ground, barrenlands sheltered with small trees, and barrenlands with boulders);
- wet land (including hummocky land, barrenland marsh and treeline marsh);
- rocky areas (barrenlands with rounded rocky areas, barrenlands with pointed rocky areas); and
- eskers (divided into esker sides and esker tops).

These habitats were described in detail in terms of their features and uses. Elders also reviewed ecological changes; they catalogued the natural changes normally expected through the seasons, and also "unnatural" changes due to development, climatic change, declining water levels and increasing fires.

The results of this project are still considered to be preliminary pending the submission of revisions to the report.

Physical Environment Projects

Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling

Organization / Researcher: Anne Wilson

Length of Project: 3 years (1997-2000)

Personnel involved: At least 10 including technicians and students, lab assistants, scientific advisors, and staff at Environment Canada, Department of Fisheries and Oceans, DIAND's Mineral Development Division, Diavik and Royal Oak mines and their drilling contractors.

Total Project Expenditures: $28,272

Sid Broersma

Drilling through the ice is an important part of mineral exploration. Drilling into kimberlite (diamond-bearing) sites produced different effects than non-kimberlite drilling.

This project looked at the effects of diamond drilling – through the ice – on water quality, sediment quality and lake bottom organisms. This information is needed by both industry and regulating agencies responsible for granting mineral exploration permits or water licenses. Short drilling holes, like those examined, are typical of first-stage mineral exploration drilling; the results are relevant to much of the drilling activity in the Slave Geological Province.

Parameters measured included water cloudiness caused when diamond drilling disturbs lake bottom sediments and releases rock particles into the water, and the thickness of material deposited. Sediment samples were analyzed for changes in sediment chemistry and particle size. Lake bottom organisms were identified and counted before and after drilling.

The study examined three drilling sites. Two of the sites were non-kimberlite: Baton Lake (near Colomac Mine), and Great Slave Lake in Yellowknife Bay near Yellowknife. Lac de Gras (Diavik Diamond Mines) was a kimberlite drilling site, and had different results.

At Baton Lake, approximately one cubic metre of rock fines were released (a typical amount for normal exploratory drilling) forming a layer up to 7mm thick at the discharge point. Sampling one year after drilling-waste release showed that the fines layer had been covered with a 10-20mm layer of organic materials which had been recolonized by bottom organisms; there was no significant change in numbers of individuals for the two major taxa (groups or families of animals), though the number of taxa at each hole decreased from four to an average of 2.4. Sediment chemistry showed a slight but not significant increase in aluminum and magnesium after drilling. Water quality measurements were the same as before drilling.

Great Slave Lake drilling had little effect on water quality; all measurements were the same as before drilling took place. Sediments settled to the bottom quickly, forming a thin coating of less than 1mm in the area of effluent discharge. There were significantly fewer bottom-dwelling organisms at the drilling discharge point but no significant difference 15 metres away, indicating that impacts were localized.

Findings at Lac de Gras were somewhat different, as drilling through kimberlite produced a more toxic effluent. Effluent chemistry at Lac de Gras showed levels of aluminum and magnesium high enough to be toxic to fish (at the time of drilling). There was a significant drop in numbers of bottom organisms shortly after drilling but numbers had recovered a year later; the number of taxa actually increased, possibly because of a boost in micronutrients resulting from the deposition of sediments.

In a laboratory experiment involving aquaria, organisms from Great Slave Lake were covered with 1, 3, and 7mm layers of drilling wastes, as would happen during drilling. Impacts were not significant. Only a few organisms died; most remained in their own layer, or constructed new burrows.

The study concluded that release of drilling effluent produces temporary and localized effects. For shallow, non-kimberlite drilling targets, diamond drilling through ice does not cause extensive physical or chemical disruption; there was no significant addition of toxic material to the lake bottom, and no significant effect on bottom-dwelling organisms. However, the researcher recommended that release of kimberlite-associated drilling effluent not be permitted unless prior testing establishes that the effluent is not toxic to fish.

Reading Water Quality Record in West Kitikmeot / Slave Sediment

Organization / Researcher: DIAND, Brian Latham/Glen Stephens

Length of Project: 5 years

Approved for one year only (with costs split over two years) (1996-1998)

Personnel involved: Only two as work was highly specialized

Total Project Cost: $29,900

Glen Stephens

A sediment core in a hollow tube is drawn up from the lake bottom. Layers within the core reveal environmental changes over the years.

Sediment in lake bottoms can provide a record of the condition of surrounding areas over time. As land is worn away by water and wind, eroded particles wash into lakes forming layers with older materials lower down and recent accumulations nearer the top. Materials in the sediment layers include metals and chemicals from the water, skeletons of tiny diatoms (algae), remains of other plants and animals living in the water, pollen from plants growing near the lake, as well as bits of soil and rock. Long-term data show the natural variability, so that interpretation of any change in the future can be placed in an historical context.

In this project, sediment from two lakes north of Lac de Gras, near the Ekati Diamond Mine, was removed and examined to provide an understanding of conditions in the area over the last hundred years. Researchers lowered a sampling device containing a hollow tube into the lake bottoms and brought up sediment cores of up to two metres long.

Sediment cores from Slipper Lake show pristine, clean conditions with increasing acidity beginning around the year 1820. The cores also indicated a period of less ice cover (longer open water conditions), and/or more active mixing of the water from the early 1820s to the present. The algae, in particular, provided a useful measure of changes over time, and may indicate long-term climatic warming. Analysis of metals in the cores showed no significant change over time. The sediment cores taken from the second lake, Lac du Sauvage, were not usable.

Socioeconomic Projects

A Community Based Monitoring System in the Slave Geological Province

Case Study – Lutselk'e

Researcher: Organization / Researcher: Lutsel K'e Dene First Nation / Brenda Parlee

Length of Project: 1 year (1996-97)

Personnel involved: A community researcher, many community members as well as nine members of the Lutselk'e Land and Environment / Social Development Committees

Total Project Expenditures: $43,027

Brenda Parlee

Using information gathered from interviews with elders, Marie Catholique and Charles Natoway study old land-use maps to identify locations where Chipewyan people lived, travelled and hunted.

In this project, researchers – guided by the Lutsel K'e Band Council and Wildlife, Land and Environment Committee – worked with the community to develop a set of indicators to measure changes to community health using the community's own knowledge and understanding. Aboriginal community members have a lot of knowledge about the health of their communities, gained from their everyday experiences, traditions and beliefs. This project is based on the idea that if the community members are going to truly benefit from mines developed close to their communities, it will be important to keep track of changes in their communities' health from their own perspective.

An important first step was to develop Chipewyan terms for ideas like "community health" and "monitoring". Meetings with various community groups, the band council and committees, and a community workshop, took place to define monitoring from the community's perspective. Monitoring translates from Chipewyan to English as "watching, listening, learning and understanding about changes in the community," while indicators are "the things that are changing."

All households in the community, and several additional small groups, were interviewed (more than 100 interviews in all) to determine community priorities for monitoring and ideas about appropriate indicators. The result was 39 potential indicators, falling into three general categories: self-government, healing and cultural preservation. Each indicator is divided into quantitative and qualitative components. Examples include: ability to take leadership to address problems in the community,

number of job opportunities in the community, rates of disease such as cancer, reported incidents of poor mental/emotional health, opportunities to learn the Chipewyan language in the home and the community and changes in harvesting patterns and use of animals. A process for monitoring was also developed and a brief manual was produced to assist other communities to implement their own community-based monitoring.

This project has been followed up with two other projects in Lutselk'e: one developed a baseline for community health using traditional knowledge, and the other implemented the monitoring program described below.

Traditional Knowledge Study on Community Health: Community Based Monitoring (Revised January 1998, March 1999 & July 2000)

Organization / Researcher: Lutsel K'e Dene First Nation / Brenda Parlee (Part One), Evelyn Marlowe (Part Two)

Part One: Traditional Knowledge Study of Community Health

Length of Project: 7 months (1997)

Personnel involved: Many community members as well as members of the Lutselk'e Land and Environment Committee (WLEC), the Elders Committee and the Youth Committee, and the Band Council.

Total Project Expenditures: $55,606

Marie Catholique

Community researcher Evelyn Marlowe transcribing elders' stories gathered during the Traditional Knowledge Study on Community Health.

Part Two: Community Based Monitoring

Length of Project: 3.5 years (1997-2001)

Personnel involved: as above

Total Project Expenditures: $300,478

This two-part project builds on the previous WKSS project on Community Based Monitoring (*A Community Based Monitoring System in the Slave Geological Province Case Study – Lutselk'e* – see p.49) (CBM - 96-97) which gathered information from community members to develop a set of indicators to measure changes in community health.

Part One of the project was the *Traditional Knowledge Study of Community Health* which was completed in 1997. Two local researchers were trained and then gathered traditional knowledge from Dene elders about community health in the past. The researchers used the indicators and traditional knowledge gathered in CBM – 96-97 as a starting point to track changes in community health as development proceeds.

An Elders Advisory Committee was set up at the beginning to provide direction. A researcher trainee was hired and trained on-the-job in research methods and advanced Chipewyan language skills. She also acquired background on community health issues. Questions were developed for interviewing elders regarding traditional knowledge of past community health, using the results of the CBM – 96-97 study. The interviews

were carried out, checked for accuracy at workshops and the results were communicated to residents of the community. Many stories were collected relating to the indicators of community health. A brief summary shows that meaningful work, learning to live the Dene way of life, harvesting and eating traditional foods, and issues related to changes in illness and health care were considered very important in a traditional view of community health.

The results of this work and of CBM – 96-97 were then used to implement *Community Based Monitoring* (CBM – Part Two). The Elders Advisory Committee continued to work with the researchers on Part Two. The overall project direction was set through the Wildlife, Lands and Environment Committee (WLEC) and there was ongoing communication with the Band Council. The researcher trainee from the previous study moved into the Project Director position, and a second researcher was hired shortly after the project began. The study was originally structured in four-month cycles. In each cycle information was collected on four selected indicators using home visits; then summarized, analyzed and communicated to the community.

The Advisory Committee chose the four indicators for Cycle 1 as jobs and related issues/effects; nutrition, especially country food consumption; employment goals of children and effectiveness of treatment programs for community members.

The WLEC took a direct role in indicator selection for Cycles 2 through 4. Cycle 2 repeated Cycle 1. Cycle 3 looked at opportunities for involvement in cultural activities, the extent to which housing needs are being met, participation in the Lutsel K'e Spiritual Gathering in relation to the practicing of traditional values and the impact of development on the land and water. Cycle 4 involved current land use, working together in the community, Dene songs and traditional skills of butchering and preparing caribou.

With Cycles 5 through 7, indicator selection was largely based on input from a Youth Committee established by the researchers. Cycle 5 gathered data on community perceptions of the effects of mining developments, incidences of cancer and tuberculosis, understanding of *Betsi Ghie* "where the water is alive" and recommendations for transferring skills on the land from elders to youth. Cycle 6 looked at communication within the community by examining issues dealt with by the Band Council; volunteerism in the community; quality of services in the community including the Co-op store, Renewable Resources Officer and Health Centre; and ways for youth to demonstrate respect. Cycle 7 repeated Cycles 1 and 2. This process yielded baseline information on 20 of the indicators, with some highlights summarized briefly below:

(Cycle one – Advisory Committee)

- employment (in the mining sector): Mining employment has varied between .02% and 19% of adults in the community though the last three years, and though some people hope that mining will lead to more sustained employment, there is frustration over availability of jobs and training and lack of ability to set up related businesses. Thirty-Five people who had worked in mining or mining related industries were interviewed. Only 14% of these were still employed, since much of the work has been casual or seasonal. Most people who had worked two weeks in/ two weeks out were happy with it; most felt employment did not negatively affect their relationship with their family;
- traditional food consumption and nutrition: fish is a summer staple and more caribou is eaten in winter than summer, though it is not clear whether this has changed since community members started working at mines;

- youth goals for education and employment: youth interest in mining sector employment increased from zero to 22% between 1997 and 2000;
- capacity of healing/treatment services to meet community needs: no change reported (still not adequate);

(Cycles two through four – WLEC)

- cultural education programs: no change;
- quality and availability of housing: no changes due to mining (there is still a need for more housing and skilled tradespeople);
- spiritual values associated with the site known as *Old Lady of the Falls*: the cultural importance of this site has not changed;
- impacts of development on the environment: some 65% of people interviewed were "very concerned" about the potential long-term environmental effects of mining in the region;
- land use activities (hunting and trapping): no change;
- self-government and working together: no change;
- traditional knowledge of drumming and songs: no change (elders still want younger generation to learn these skills);
- traditional knowledge required for harvesting and butchering caribou: no change;
- impacts of mineral resource development on families: almost three quarters of those interviewed felt that employment would be the greatest benefit of mineral development but that the environment would be "ruined";

(Cycles five through seven – Youth Committee)

- traditional values and respect for the site known as *Betsi Guie*: no change
- incidence of cancer and tuberculosis: no particular relationship with mining development was noticed;
- opportunities for teaching youth on the land: workshop made plans for how to improve this;
- effectiveness of the leadership in decision-making: results confidential;
- quality of local services including the Co-op store, Renewable Resources and the Health Centre: results confidential;
- working together (volunteerism): 80% said they are willing to do volunteer work in the community; and
- family values of respect for and among youth: results confidential.

The information collected in the indicator surveys is preliminary – or baseline – information, so not much change would be expected yet. In general, the indicators show that the mining sector is not perceived to have had a measurable impact on community health. Employment levels have been low and have not met community expectations. On the other hand there is a high level of concern about environmental damage from mining: unless employment levels increase, the community is likely to view mining sector development as overwhelmingly negative.

The results of the Community Based Monitoring component of this project are still considered to be preliminary pending the submission of revisions to the report.

Preliminary Projects (no data produced)

Caribou Calving Ground Project: Habitat Characteristics of the Calving Area of the Bathurst Caribou Herd

Organization / Researcher: Fritz Mueller

Length of Project: 3.5 years

Total Expenditures: $231,325

Project re-organized and revised after 2nd year

(see Bathurst Caribou Calving Ground Study on p.27)

Airborne Dust Level Baseline Monitoring Project

Organization / Researcher: GNWT, Emery Paquin

Length of Project: 5 years Approved for one year (1996-1997)

Total Expenditures: $53,000

Developed data collection equipment in 1996-97. Air sampling was not included in final WKSS research priorities so project did not receive continued funding.

Lutsel K'e Traditional Knowledge of West Kitikmeot / Slave Study Area: Overview, Assessment and Research Planning

Organization / Researcher: Lutsel K'e Dene First Nation, Ellen Bielawski

Length of Project: 4 months (1996-1997)

Total Expenditures: $31,130

Proposal for research was developed.

Preliminary Proposal to Develop Three Comprehensive Proposals to Undertake Traditional Knowledge Research Associated with Three Scientific Research Studies

Organization / Researcher: Rae Edzo Metis Nation Local # 64

Length of Project: 3 weeks (1996-1997)

Total Expenditures: $10,407

Proposal for research was developed.

Preliminary Traditional Knowledge Study and Formation of Steering Committee

Organization / Researcher: Yellowknife Metis Council

Length of Project: 10 weeks (1996-1997)

Total Expenditures: $14,490

Proposal for research was developed.

Assessment of Progress

With the completion of the five-year Study it is time to reflect on the Study's Objectives, as set out in the Terms of Reference (see Appendix A), and on the Research Questions (see Appendix B). In this section we look back on the work done and assess the degree to which objectives have been accomplished and Research Questions answered.

a) Assessment of Accomplishment of Objectives

All of the Study's objectives are being met to a greater or lesser degree, but none are completely fulfilled:

1) Provide an information base necessary for Study Partners to make sound resource management decisions.
Assessment – performed to the degree possible within the time and resources available.

- An **information base** for Study Partners to make sound resource management decisions is partially in place, largely in the form of high-priority regional-level baseline data (see "Project Results" and "Overview of Results" in this report). In some cases longer-term research is required to develop an adequate baseline, and in these cases a good start has been made which should be continued. Some research questions have been only partially addressed (this is discussed in greater detail under "Assessment of Extent of Research Questions Answered" below).
- The updated *WKSS State of Knowledge Report* has provided a succinct overview and synthesis of published documentation on environmental and socioeconomic research in the Study Area, including WKSS research, and a brief analysis of remaining critical gaps and possible next steps for cumulative effects monitoring (see "State of Knowledge in WKSS Area, on page 57, for more details).

2) Provide a basis for the identification and assessment of cumulative effects for planning and development purposes.
Assessment – largely accomplished.

- The research program was developed with the intention of providing a baseline from which **regional changes due to cumulative effects can be detected.** Priorities were set using a technique that determined the intensity and duration of the highest potential regional-level effects of various development activities on Valued Environmental and Socioeconomic Components as defined by the Partners and expert consultants. This approach ensures the information collected will be useful in meeting the objective.

3) Provide a forum in which to share information on issues, while respecting the diversity of interests: aboriginal, industry, environmental organizations, governments, and the public.
Assessment – accomplished.

- Each meeting, as well as informal contact between meetings, has been a **forum for sharing information** among the Partners including existing research and research needs, development activities, regulatory initiatives, etc.

4) Provide the information necessary to enhance the understanding of potential impacts of exploration and development on ecological processes and communities.
Assessment – performed to the degree possible given available resources and time.

Robert Gau

- WKSS has provided information necessary to enhance the understanding of potential impacts of exploration and development on ecological processes and communities (as described above), largely through the collection of baseline data which can be, and has been, used in environmental assessment, monitoring and management.
- the Diavik Diamond Mines Environmental Effects submission cites many of the WKSS studies including:
- Wildlife: Caribou movements, Grizzlies, Wolverine, Wolves
- Traditional Knowledge – all
- Socioeconomic: Community Based Monitoring
- Tahera's EIS for its Jericho project cites two WKSS studies.

5) Support a central role for both traditional knowledge and scientific knowledge, and facilitate the linkage of research carried out in these systems.
Assessment – the first part of the objective has been brought about; however the linkage between the two types of knowledge is weak.

- **Scientific and traditional knowledge are recognized as having equal value** in providing information regarding effects of development and, where possible, both scientific and traditional knowledge studies have been focused on priority research questions. Of the studies funded 10 are in the area of traditional knowledge and 15 are classed as scientific research.
- The Study's updated *State of Knowledge Report* identified the largest information gap as being in the area of documented traditional knowledge.

6) Ensure the accessibility of Study research results and information to all Partners and the public, while respecting the confidentiality of certain information.
Assessment – accomplished.

- **Research reports are accessible** through a website or hard copy, and each project includes a plain-language summary for non-professionals. **Data can also be accessed** as long as certain confidentiality requirements are met, particularly in the case of data collected in communities which is deemed to be sensitive and/or intellectual property of the community.

7) Maximize community research training opportunities and the use of community resources in all Study research.
Assessment – accomplished.

- All **research projects were required to provide training and benefits to communities** wherever feasible, and this has occurred in the majority of WKSS projects. Training has ranged from ongoing training in traditional knowledge research to exposure to various scientific techniques in the field, and has usually occurred through employment with the research project.

b) Assessment of Extent of Research Questions Answered and Identification of Gaps

The extent to which the research questions have been answered has been assessed. It should be noted that the Research Questions were refined from the initial research priorities, to make for a more coherent, achievable research program.

Much of the research has focused on caribou and habitat from both a scientific and traditional knowledge perspective. Caribou are the most populous, extensively ranging species in the region, and the species most depended on by virtually all the communities in the Study Area.

1) Baseline information on the traditional economy – some research has been gathered on harvesting patterns for caribou by each of the aboriginal communities, but no valuation has taken place, so this question still requires significant research.

2) Social and Economic Benefits/Dis-benefits of Development to Communities – a pilot project on community based monitoring in Lutselk'e has examined a number of these questions. The project is still in the early stages, with many indicators only examined once or twice. This kind of monitoring has not been applied in other communities.

3) Water Quality – little work has been done in this area by WKSS. Studies of the effects of on-ice drilling on water quality have occurred, as well as a study on historical water quality using sediment. Site-specific information has not been collected as a result of a decision by the Board to wait until existing water quality data had been assessed and gaps identified. This assessment was done by DIAND and recommendations were that site-specific data should not be collected by WKSS. DIAND has initiated an ecosystem study on the Coppermine River basin which addresses many of the major water quality concerns identified by Partners.

4) Surface drainage has not been studied.

5) Baseline information on habitat has been collected through a satellite vegetation classification, a study of eskers, and through traditional knowledge studies, including a specific focus on the Bathurst caribou calving grounds. Use of habitats by Grizzly Bear, caribou and wolves have been investigated through scientific and traditional knowledge studies. Studies of Moose have not been done, and information on significant habitats and critical areas has not been directly collected, although existing WKSS project data will be critical in identifying such areas and habitats.

6) Some work on distribution of cultural, heritage and sacred sites has been done through traditional knowledge studies, and some work on archaeological sites on eskers was included as part of the studies of eskers as habitat.

7) Some initial work has been done on the effects of human activities on key species using both scientific and traditional knowledge. Baseline information has also been collected which can be used to detect very coarse-scale changes in vegetation. The most detailed work has been done on Grizzly Bear, although some information has been collected on caribou, wolves and Wolverine.

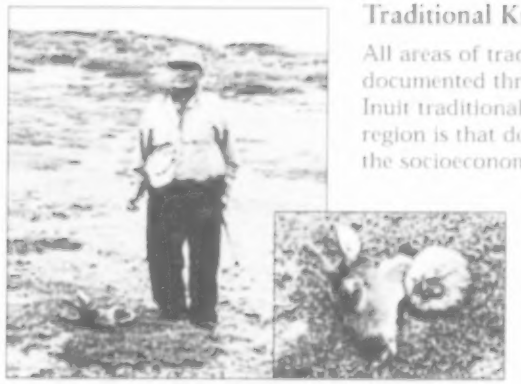
8&9) One project was done to assess methods to deflect caribou away from mine sites, using scientific methods of observation and traditional methods for directing caribou movement.

10) No work has been done on wildlife mortality.

While we are much closer to answering many of the WKSS research questions, it would be incorrect to say they have all been fully answered. With the Study now complete it will be valuable to assess the research collected, and the initial set of research questions, and recommend new questions based on current research priorities and the need for cumulative effects monitoring.

State of Knowledge in the West Kitikmeot / Slave Study Area

In addition to gaps remaining in the answers to the WKSS research questions, the Study's *Updated State of Knowledge Report* has identified some more specific research requirements and some additional gaps. A summary is presented here.



Alice Legat

Joe Mapsi returning to camp with caribou delicacies.

Traditional Knowledge

All areas of traditional knowledge are poorly documented throughout the Study area; the only Inuit traditional knowledge documented in the region is that done for WKSS. This applies to both the socioeconomic and natural environment. In addition there is a need to do more complete documentation of cultural knowledge such as trails, landmarks or sacred sites.

Socioeconomic

The report identified a number of areas of socioeconomic research and monitoring:

- the effect and extent of increasing industrialization on community, family and individual lifestyles, including the effects of rotational work.
- a major element of this would be the effects on, and changes in, participation in renewable resource harvesting and changes in harvesting patterns.

- troubling social behaviours have been emerging in WKSS communities – gambling, prostitution, organized drug activity – in addition to existing risky behaviours such as alcohol and drug abuse and smoking. These are not well studied, particularly at the community level.
- effects of specific development projects on the environment, and the role of aboriginal people in monitoring these effects has yet to be assessed in a systematic way.
- benefits and dis-benefits of mining and other development activities.
- effects of new approaches to Aboriginal involvement in, or authority for, land and resource use – particularly land claim agreements and impact/benefit agreements – on reducing, managing or creating socioeconomic stresses.
- trends in health related to lifestyle changes and particularly relationships with changes in diet, and effects of contaminants in country foods.

Natural Environment

- the influence of existing developments on water quality has been poorly documented, particularly in relation to hydroelectric developments.
- a great deal more research is required in relation to terrestrial, freshwater and marine ecosystems, and the interactions between them eg. nutrient cycling.
- habitat limitations on wildlife populations, interconnectedness of prey and predator species and relationships between wildlife and the vegetation they eat, as well as the effects of fire and recovery of vegetation afterward, are all poorly documented.
- the marine environment and ecosystem between Victoria Island and the mainland is virtually undocumented. A starting point would be the biological communities, food webs and estimates of productivity. Little is known about seasonal changes in the physical and chemical conditions here.
- the freshwater environment is better documented but information is spotty.
- little is known about the effects of human activity on wildlife, ranging from the use of flagging tape in exploration to full-scale mining or hydroelectric developments and road infrastructure. Such studies, along with general ecological understanding, are needed to predict and manage the cumulative effects of development.
- effects of climate change on the region are likely to be widespread and significant – these will include direct effects on the environment as well as effects on plants, animals, fish and birds due to these effects. Studies should include changes in the physical environment such as permafrost and rates of precipitation and evaporation; widespread habitat change using remote sensing and effects on food webs.
- tracking contaminant levels especially in country foods. Mercury in fish is a particular concern.
- coordinated development of indicators of environmental and socioeconomic change, particularly cumulative impacts of development.

Finally the *State of Knowledge Report* pointed out that the development and use of meta data systems, including Geographic Information Systems, would make access to information for decision-makers easier and faster.

Conclusions

1) More Research is Needed

Development pressures continue in the region, with the BHP Ekati diamond mine in operation, Echo Bay's Lupin gold mine back in operation, the Diavik diamond mine under construction, Tahera's Jericho diamond project in the environmental assessment phase and De Beers' Snap Lake diamond project set to begin environmental assessment. There is ongoing activity at De Beers' Kennady Lake diamond project, Hope Bay Gold and Miramar's gold exploration work (Boston/Doris/Windy) and several less advanced projects. There is also the huge and ambitious proposal for a Bathurst Inlet port and road infrastructure to support mineral exploration and development in the West Kitikmeot. All of these projects will make use of WKSS' current database in assessing potential impacts and monitoring change.

A great deal more research is necessary in order to establish a baseline of information on all priority research areas identified by the Partners in the WKSS area. Baseline information is also needed on other important research topics such as those identified in the *Updated WKSS State of Knowledge Report*. Further work – grounded in both scientific and traditional knowledge – will be needed to establish and implement a rigorous monitoring program to identify regional cumulative effects of development. The information collected by the Study will provide a good starting point for this.

WKSS has executed its research tasks effectively and with the support of all Partners. The Partnership has been an effective means of setting research priorities, reviewing and approving research projects, administering the projects and disseminating the information collected. It has also been an essential mechanism for sharing information among key decision-makers in the West Kitikmeot / Slave Study Area including aboriginal organizations, industry, environmental organizations and governments.

With WKSS officially completed, there is no alternate structure established to continue and advance the Study's research.

2) Capacity to Effectively Use Research Requires Improvement

WKSS commissioned a study to determine how the information collected had been used by the various Partners as part of the process of assessing our work. A review of the comments by Partners, as well as the documents used reveals that capacity to effectively use all the information is lacking in all Partners. Industry and Government Partners have indicated they are not sure how to effectively use traditional knowledge information in their decision-making. At the same time it appears that Aboriginal Organizations have not fully utilized the information collected through scientific research.

Alice Legat

This photo of Gots'ok'a (cloudberry) was taken at Mesa Lake during traditional knowledge studies. The traditional name for the lake is Gots'okati, translated in Dogrib as Cloudberry Lake; the Dogrib name indicates the local resources, and stimulates other memories of the area.

A Look Ahead

The Study is now complete; however much work remains to be done. The Board has approved a detailed proposal and work plan for wrapping up the current Study during 2001/02 and fundraising is well underway.

The first component of the proposal is a wrap up of the current research. All research projects were required to submit their final reports no later than March 31, 2001. Following the submission of the last of the reports, the ambitious task of final reporting began. This includes:

- reviewing research reports (including independent expert reviews);
- synthesizing all of the information collected over the last five years;
- producing a final report in print (this document) and Compact Disk format;
- putting all the reports and data into an internet accessible form; and
- distributing the information to the Partners and interested public.

All research projects under WKSS must be completed and reported on within a specified time frame – and pass peer review. WKSS ensures full research results are equally available to industry, governments, native and environmental organizations, and the general public. All WKSS research reports can be accessed, immediately and free of charge, through the WKSS web site.

The Study's final reporting is expected to be completed December 2001.

We also have an extensive update of the *State of Knowledge Report* on the WKSS area.

The second component of the proposal involves some planning for future research. The Study Partners have concluded that there is a need for continued traditional knowledge and scientific research on the effects of development in the WKSS area after March 31, 2001. The value of the Society's research in assessing the cumulative effects of potential developments in the West Kitikmeot / Slave area has been clearly demonstrated by its role in the assessment of cumulative environmental effects related to the Diavik and Jericho projects. The information has been equally useful to industry, regulators, intervenors and all those taking an interest in the potential effects of such development, and in achieving sustainable development in the area.

The Partners believe that discussions regarding a possible successor organization to continue the research presently carried on by the Study are needed. Such discussions must complement and fit into larger initiatives related to cumulative effects monitoring and management. The proposal developed by the Partners for 2001-02 includes a

Mike Voytik

Learning about mining from the pros during Mining Week (1999).

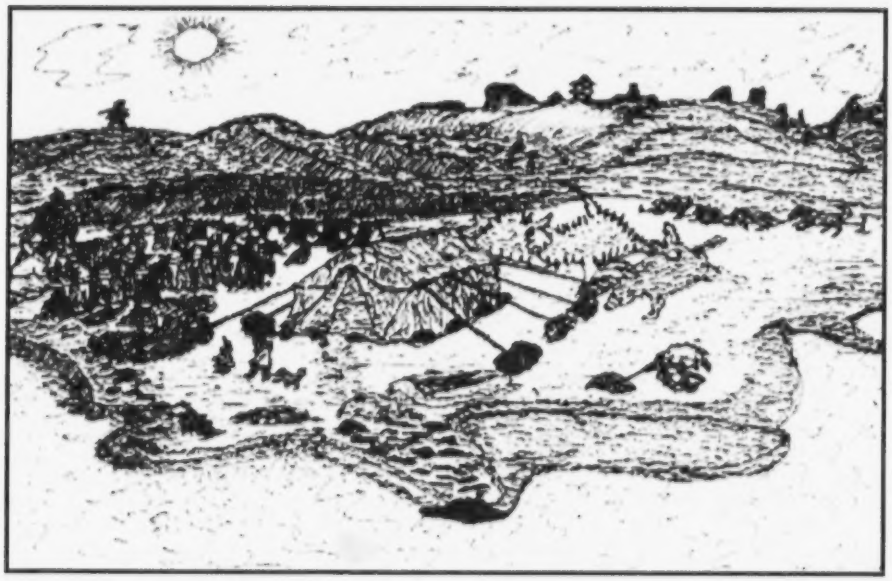
planning component to prepare recommendations for a successor organization which would include:

- broadened membership;
- revised objectives; and
- a new research program.

The outcome of the planning work will be a proposal for a mechanism which can provide information needed as part of the Nunavut General Monitoring Program (NGMP) and the Mackenzie Valley Cumulative Effects Assessment and Management Framework (CEAMF). The CEAMF Working Group has endorsed this planning process by WKSS as supporting their work to develop a regional action plan for the Slave Geological Province. The Partners plan to bring together a wider range of potential partners to:

- consider an appropriate structure for carrying out further research;
- identify any high priority gaps remaining in baseline information for cumulative effects assessment and resource management decision-making; and
- identify information needs and requirements for effective cumulative effects monitoring in the area.

The Partners' proposal also includes a component to continue some key research projects identified by the Traditional Knowledge Steering Committee and Project Steering Committee during the transition period after March 31, 2001 until the CEAMF and NGMP are fully operational.



Documenting traditional knowledge was done through various means including interviews, site visits, photo records, video taping, story telling, writing workshops and drawings. This scene was done by Mary Kilaodluk, Ikaluktuuttiak, 2000, during one of several elder-youth drawing workshops for the Tuktu and Nogak project.

Appendices

A. Terms of Reference

B. WKSS Research Questions

C. Financial Statements

D. Reports Available

Appendix A

West Kitikmeot / Slave Study

TERMS OF REFERENCE

(Approved December 14th, 1995)

1. Introduction

The level of exploration activity and the development potential, particularly for mining, in the West Kitikmeot / Slave area is significant. At the same time the area is home to a population which includes Inuit, Dene and Metis aboriginal peoples, who depend upon the natural resources of the area. There is insufficient information and data on the area in terms of development potential, environmental quality, wildlife populations, and critical habitats. Consequently possible cumulative effects of development in the area are poorly understood. The West Kitikmeot / Slave Study was initiated to provide an information base to support sound resource management decisions and to examine the short-term and long-term effects of development. The study involves the cooperation and participation of many interested parties: industry, aboriginal organizations and communities, co-management organizations established through land claims, other non-government organizations, and government. Collaborative research encouraged through the study will form a basis for the continuation of this research after the division of the Northwest Territories.

2. Vision Statement

The vision of the Partners is to achieve sustainable development in the West Kitikmeot/ Slave Study area which respects aboriginal cultural values, so that the land is protected, culture is preserved, and community self sufficiency / reliance is enhanced.

3. Goal

The goal of the Study is to collect and provide information for the West Kitikmeot / Slave area to assist informed decision making by the Partners, and to facilitate sustainable development.

4. Objectives

The objectives of the West Kitikmeot / Slave Study are to:

- provide an information base necessary for Study Partners to make sound resource management decisions
- provide a basis for the identification and assessment of cumulative effects for planning and development purposes
- provide a forum in which to share information on issues, while respecting the diversity of interests: aboriginal, industry, environmental organizations, governments, and the public

- provide the information necessary to enhance the understanding of potential impacts of exploration and development on ecological processes and communities.
- support a central role for both traditional knowledge and scientific knowledge, and facilitate the linkage of research carried out in these systems.
- ensure the accessibility of Study research results and information to all Partners and the public, while respecting the confidentiality of certain information.
- maximize community research training opportunities and the use of community resources in all Study research.

5. Study Partners

Partners in the Study may include all organizations and agencies who have a legitimate vested interest in the area. Each Partner must be accepted by consensus of the other Partners, and each Partner must agree to support the vision, goal and objectives of the Study. The initial Partners in the Study are shown in section 6. The list of Partners may be reviewed and revised from time-to-time.

6. Management Board

The management structure shall be cost effective, efficient, representative of the Partners, flexible, and shall build on existing bodies and institutions to the extent possible. It shall be composed of a Management Board and a small study office. The Management Board shall have a Chair selected by the aboriginal members and initially may include a representative (or alternate) of:

- Dogrib Treaty 11 Council
- Lutsel K'e / Yellowknives Dene Bands
- Inuit organizations
- Nunavut Co-management organizations
- Metis Nation NWT
- Industry
- Environmental organizations
- GNWT
- Canada

The Management Board members shall have decision-making authority, to the extent possible, on behalf of the organization(s) they represent. The Management Board shall operate on the principle of consensus, although it is recognized that this may not always be achieved. The Management Board will be responsible for managing Study resources, making decisions on the design and conduct of research, ensuring that the interests and policies of the Partners are respected, public involvement, and directing the operations of the Study Office.

7. Study Office

The Partners will establish a small independent Study Office to: coordinate, conduct, and facilitate Study work; carry out management and administrative duties; and implement a communications strategy. The Office will be managed by a Study Director recruited by the Partners, and accountable to the Chair of the Management Board or his/her Board member delegate. The Study Office, located in Yellowknife, shall be open and accessible to the public.

8. Study Design

The design of the Study will be determined and managed by the Management Board. Research will be conducted in accordance with regulations of the Government of Nunavut, GNWT, the Nunavut Final Agreement and the research protocols of the Dene-Metis. Study information should be able to measure and predict future changes and to assess cumulative effects. Baseline data is required with specific emphasis on linkages between the various environmental and socioeconomic components, keeping in mind that the information must be able to assess the effects of development. Research project proposal selection criteria will be developed (building on the DCI draft).

9. Communications and Information

Communications will be a high priority of the Partners and the Study Office. A communications strategy will be developed to keep the Partners, communities and the general public informed. Community meetings or workshops will be held to discuss issues and concerns, and to report on progress. Key documents produced by the study office will be translated into Chipewyan, Dogrib, Inuinnaqtun, and Inuktitut. A newsletter will be produced occasionally, and there will be an Annual Report.

10. Funding

The federal and territorial governments will each contribute up to one-third of the Study's costs to a maximum of $750,000 each year for five years, provided that the other Partners contribute the remaining one-third. (For each dollar contributed by a Partner the federal and territorial governments will each provide a matching dollar, up to the maximum). The mining industry, and environmental organizations have pledged to contribute funds to the Study for projects which meet their own criteria over and above those of the Management Board. The aboriginal Partners are acknowledged as having valuable traditional knowledge which will benefit the Study and which can be considered a contribution-in-kind. However, it is recognized that some Partners may require funds from the Study in order to fully participate.

Appendix B

WKSS Research Questions

(approved February 11, 1997)

Socio-Economic Research

A. Traditional Economy:

1. What is the baseline information about the nature of the traditional economy for the region, specifically:

a) What are the existing patterns for each community of:
   i) natural resource use?
   ii) harvesting patterns, particularly for caribou?

b) What is the value of the traditional economy:
   i) in dollars?
   ii) in subsistence value (local consumption, cultural well-being)?

B. Social and Economic Benefits / Dis-benefits

2. What are the social and economic benefits and dis-benefits of development to communities?

a) Social Benefits / Dis-benefits:
   i) Which indicators are most appropriate for monitoring changes in social wellness?
   ii) What is the baseline information concerning social wellness for each community, using community based indicators? What is the baseline information concerning family related issues (e.g., violence), substance abuse, services and infrastructure, and economic disparity between and within communities?
   iii) What is the traditional knowledge about social wellness?
   iv) What are the socio-economic and human health trends and effects of development, using community based and environmental indicators?

b) Economic Benefits / Dis-benefits:
   i) What is the baseline information on economic conditions for each community, using community based indicators?
   ii) What is the indigenous knowledge about community economic conditions?
   iii) What is the indigenous knowledge about the socio-economic and human health effects of non-traditional economic development?

Physical and Environmental Research

C. Water Quality:

3. What is the baseline water quality for the region, specifically:

a) What are the key parameters for water quality from a perspective of:
   i) socio-economic / human health?
   ii) ecological health?

b) What are the baseline conditions with respect to these parameters?

c) Where should these parameters be measured?

d) What is the distribution, cause and magnitude of poor water quality with respect to key parameters?

e) Where should poor water quality be measured?

f) What is the traditional knowledge about water quality?

g) What are the effects of contamination on the cultural, spiritual, and emotional health of people?

D. Surface Drainage:

4. What are the regional patterns and variations in surface water flow?

a) from a scientific perspective?

b) from a traditional knowledge perspective?

E. Baseline Habitat and Land Use:

5. What is the baseline information about habitat for the region, specifically:

a) what is the distribution of:
   i) soil types?
   ii) terrain types, especially eskers?
   iii) vegetation communities?

b) how are these habitats used by humans as well as Grizzly Bear, caribou, wolves, and Moose?
   i) How does this use vary seasonally?
   ii) For these species, what are the:
      - most significant habitats?
      - critical areas?
      - migration routes?

6. What is the land use and distribution of human facilities in the region, such as:

- cultural, heritage and sacred sites?
- camps?
- cabins?
- trails?
- communities?
- seasonal roads?
- mines?
- other infrastructure?

F. Habitat Loss / Fragmentation / Alienation:

7. What is the state of knowledge about the effects of human activities and facilities on ecosystems and key species:

a) species likely to be affected, particularly Grizzly Bear, caribou, wolves, Moose, and endangered or threatened species, in a way that is detrimental to the ecosystem and / or human well-being?

b) extent of habitat loss or alienation for Grizzly Bear, caribou, Moose, wolves, and endangered or threatened species?

c) known responses and behaviour of Grizzly Bear, caribou, Moose, wolves and endangered or threatened species to human activities/facilities?

8. What mitigation methods are effective in minimizing the effects of human facilities on the movements and behaviour of wildlife, particularly caribou?

9. What is the indigenous knowledge about mitigation methods which are effective in minimizing the effects of human facilities on the movements and behaviour of wildlife, particularly caribou?

G. Wildlife Mortality:

10. What is the magnitude and distribution of mortality to caribou, Grizzly Bear and waterfowl from human causes, including recreational and subsistence hunting, vehicle-wildlife collision and killing of "nuisance" animals?

Appendix C

West Kitikmeot / Slave Study Society

Financial Statements

March 31, 2001

The audited financial statements are in a separate file

Auditors' Report

Statement of Operations

Statement of Equity

Balance Sheet

Statement of Changes in Financial Position

Notes to Financial Statements

Schedule of Research Projects

Appendix D

Reports Available

These reports are all available through the WKSS homepage at www.wkss.nt.ca and will continue to be available at that site for the next five years.

PROJECT REPORTS

Some of these reports have not yet completed the review protocol process (shown as "in review"), so were not publicly released as of March 31/01. As they are released they will be uploaded to the WKSS homepage. The page number for the summaries of these reports follows each report title.

A. Final Reports

1) Changes on the Land and Water: "Watching, Listening, Learning and Understanding" (environmental monitoring) at Kezus kue – Desnethche (shown as Lutsel K'e Traditional Knowledge, p. 53)

2) Research Proposal: Traditional Knowledge of Caribou Calving Grounds; Water Quality; Wolverines (shown as Preliminary Proposal to Develop Three Comprehensive Proposals, p. 53)

3) Gathering of Oral History of Metis from Old Fort Rae (shown as Preliminary Traditional Knowledge Study, p. 53)

4) Community Based Monitoring in the Slave Geological Province (p. 49)

5) i. Summer Behavior of the Bathurst Caribou Herd at Mine Sites (non-official report, p. 36) including
   ii. Effect of Gravel Road and Tailing Pond Dust on Tundra Plant Communities near Lupin Mine, NWT (non-official report, p. 36)

6) Results from Sediment Cores Collected from an Arctic Tundra Lake, Northwest Territories (shown as Reading Water Quality, p. 48).

7) i. Grizzly Bear (Ursus arctos) Studies in the Northwest Territories: Final Report to the West Kitikmeot / Slave Study Component No. 1, Nutritional Ecology; and
   ii. The Spatial Organization and Habitat Selection Patterns of Barren-ground Grizzly Bears (Ursus arctos) in the Northwest Territories and Nunavut (both reports shown as Population Ecology of Grizzly p. 44)

8) i. Traditional Knowledge on Community Health (p. 50)
   ii. Final Report: Community Based Monitoring (in review, p. 50)

9) i. Esker Habitat Characteristics and Traditional Use Study in the Slave Geological Province; (in review, p. 37) and
   ii. Esker Habitat Studies in the Slave Geological Province: Movements and Habitat Use of Wolves Denning in the Central Arctic, Northwest Territories and Nunavut (in review, p. 37)

10) Wolverine Ecology, Distribution and Productivity in the Slave Geological Province (in review, p. 42)

11) Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling (p. 47)

12) Caribou Migration and the State of Their Habitat (shown as Dogrib Traditional Knowledge, in review, p. 31)

13) Seasonal movements of satellite-collared caribou from the Bathurst herd (in review, p. 33)

14) The Habitat of Dogrib Traditional Territory: Place Names as Indicators of Bio-Geographical Knowledge (in review, p. 39)

15) Tuktu and Nogak project: a Caribou Chronicle (in review, p. 29)

16) Traditional Ecological Knowledge in the Kache Tue Study Region (in review, p. 45)

17) Vegetation Classification for the West Kitikmeot / Slave Study Region (in review, p. 41)

18) i. Bathurst Caribou Calving Grounds Studies: Influence of Nutrition and Human Activity on Calving Ground Location; (in review, p. 27) and
ii. Prevalence and Intensity of Gastro-Intestinal Nematode Parasitism in the Bathurst Caribou Herd 1998-99 (non-official report, p. 27)

B. Annual Reports

1) 1996-97 – Wolverine Ecology, Distribution and Productivity in the Slave Geological Province

2) 1997-98 – Wolverine Ecology, Distribution and Productivity in the Slave Geological Province

3) 1996-97 – Habitat Characteristics of the Calving Area of the Bathurst Caribou Herd

4) 1996-97 – Seasonal movements of the Bathurst Caribou Herd

5) 1997-98 – Seasonal movements of the Bathurst Caribou Herd

6) 1998-99 – Seasonal movements of the Bathurst Caribou Herd

7) 1999-00 – Seasonal movements of the Bathurst Caribou Herd

8) 1996-97 – Summer behaviour of Bathurst Caribou Herd at Mine Sites

9) 1996-97 – Airborne Dust Level Baseline Monitoring

10) 1996-97 – The Habitat of Dogrib Traditional Territory

11) 1997-98 – The Habitat of Dogrib Traditional Territory

12) 1998-99 – The Habitat of Dogrib Traditional Territory

13) 1999-00 – The Habitat of Dogrib Traditional Territory

14) 1996-97 – Traditional Knowledge Study on Community Health

15) 1996-97 – Reading Water Quality in West Kitikmeot / Slave Sediment

16) 1996-97 – Traditional Knowledge on Caribou Migration and the State of the Habitat

17) 1997-98 – Traditional Knowledge on Caribou Migration and the State of the Habitat

18) 1998-99 – Traditional Knowledge on Caribou Migration and the State of the Habitat

19) 1996-97 – Esker Habitat Studies in the Slave Geological Province (two reports – one not publicly released)

20) 1997-98 – Esker Habitat Studies in the Slave Geological Province (two reports – one not publicly released)

21) 1998-99 – Esker Habitat Studies in the Slave Geological Province

22) 1996-97 – The Spatial Characteristics and Nutritional Ecology of Barren-ground Grizzly Bears (*Ursus arctos*) in the Central Northwest Territories

23) 1997-98 – The Spatial Characteristics of Barren-ground Grizzly Bears (*Ursus arctos*) in the Central Northwest Territories

24) 1996-97 – Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling

25) 1997-98 – Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling

26) 1998-99 – Investigation of Aquatic Impacts of On-Ice Exploratory Diamond Drilling

27) 1997-98 – Tuktu and Nogak project

28) 1998-99 – Tuktu and Nogak project

29) 1999-00 – Tuktu and Nogak project

30) 1997-98 – Habitat/Vegetation Classification for the West Kitikmeot/Slave Study Region

31) 1998-99 – Vegetation Classification for the West Kitikmeot/Slave Study Region

32) 1999-00 – Vegetation Classification for the West Kitikmeot/Slave Study Region

33) 1997-98 – Community Based Monitoring – Implementation

34) 1998-99 – Community Based Monitoring – Implementation

35) 1999-00 – Community Based Monitoring – Implementation (in review)

36) 1998-99 – Bathurst Caribou Calving Ground Studies

37) 1999-00 – Bathurst Caribou Calving Ground Studies

38) 1998-99 – Traditional Ecological Knowledge Research in the Kaché Tué Study Region

39) 1999-00 – Traditional Ecological Knowledge Research in the Kaché Tué Study Region (in review)

WKSS DOCUMENTS

(many of these are also available on the WKSS Homepage)

1) WKSS Partners' Accord

2) WKSS Terms of Reference

3) Final Report on the Research Strategy Workshop, Yellowknife, NT, Feb 27-Mar 1, 1996

4) Research Strategy (April 1, 1999 revision)

5) Draft plain language Research Strategy for Traditional Knowledge research

6) Guidelines for Traditional Knowledge research

7) Research Project Proposals (received from researchers)

8) Summary of Approved Research Projects (March 2001 version)

9) Contribution Agreement template

10 Research Agreement template

11) Management Board
- Summaries of Discussion
- Meeting Kits

12) Project Steering Committee
- Summaries of Discussion
- Meeting Kits
- Terms of Reference

13) Traditional Knowledge Steering Committee
- Summaries of Discussion
- Meeting Kits
- Terms of Reference

14) Executive Committee
- Summaries of Discussion
- Meeting Kits
- Terms of Reference

15) Approved Annual Budgets

16) Unaudited Financial Statement 1995-96

17) Audited Financial Statement 1996-97

18) Audited Financial Statement 1997-98

19) Audited Financial Statement 1998-99

20) Audited Financial Statement 1999-00

21) Unaudited Financial Statement to March 31, 2001

22) WKSS Funding Commitments/Contributions from Partners

23) WKSS Information for Researchers (including formats for Project Reporting), September, 2000 version

24) Brochure

25) Poster (all languages of Study area)

26) Press Releases

27) Personnel and Administrative Policies

28) Travel Expense Policy - Board and Committee members (revised 1999)

29) Project Development Funding Policy

30) Researcher Conference Travel Policy

31) WKSS Research Framework Final Report (March 1997)

32) WKSS Newsletters - Issues 1 to 7

33) WKSS Information Storage and Access Study (April 1997)

34) An Assessment of Traditional Knowledge Research Training and Funding Opportunities for the West Kitikmeot / Slave Study Society (May 1997)

35) Access to Information Policy

36) State of Knowledge Report: West Kitikmeot and Slave Geological Province

37) Draft Updated State of Knowledge Report: West Kitikmeot and Slave Geological Province

38) WKSS in the Future - draft for discussion (January 2000)

39) Draft Report on the Workshop on the Future of the West Kitikmeot/Slave Study March 2-3, 2000

40) Proposal: Next Steps for the West Kitikmeot / Slave Study and Funding Requirements

41) Benefits of the West Kitikmeot / Slave Study: Usage Report

42) Annual Report 1996-97

43) Annual Report 1997-98

44) Annual Report 1998-99

45) Annual Report 1999-00